Telephony.

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NEVER FORGET THE MAN.

Contented men give a better result than mere men. Enthusiastic men give a better result than merely contented men. Men with pride in their work, with enthusiasm in their blood, and loyalty in their hearts, can whip the world. That sounds like sentiment. So it is, but the stuff that rules the world, certainly has a place in ruling a business. When you get down to the men, show them that you trust them. Tell them what you expect them to do. Most of them will try to deserve responsibility, and you'll find it pays to get rid of the others.—E. St. Elmo Lewis.

Sound Words from the Cabinet.

Little has been heard from President Wilson's cabinet recently in favor of government ownership of the telephone and telegraph, or of anything else for that matter. This may be surprising to some people who apparently leaped to the conclusion that, because Postmaster General Burleson advocated federal ownership and operation of the wire facilities of the country in his annual report to Congress, the whole administration was committed to the proposition. Like many other politicians, however, it is probable that Mr. Burleson made his political play by urging the taking over of the telephone and telegraph systems for the "peepul," and, finding no great popular outburst in favor of this propaganda—save in the Hearst newspapers—wisely decided to let the matter rest.

It is believed that the Wilson administration does not value very highly the government ownership issue, especially since recent elections have indicated that the voters do not support policies calculated to disturb and unsettle business conditions. At least, Mr. Burleson and Congressman Lewis have not met much encouragement from their associates in power. Mr. Lewis still cherishes his fad, but Mr. Burleson has not chirped about it since his report was placed on file in the dusty archives at Washington.

A speech was made in New York, the other day, that plainly indicated where one member of the Wilson cabinet stands on the government ownership plan. It came from the lips of Lindley M. Garrison, secretary of war, who has come to be considered the sanest, most dependable and efficient man around the presidential council table. In this address, secretary Garrison said: "The least government that is consistent with the proper doing of those things that must be done collectively, the better; the more the individual citizen is permitted to expand, develop his character, his energy and his talent without hampering restrictions, the better." Granted, of course, that in this expanding, neither individuals nor corporations transgress the law of the square deal for others.

Secretary Garrison has given here an excellent definition of what Americans think their government should be. It is not asserted that he had in mind the government ownership idea when he uttered these words. But at the same time, they constitute an argument against that idea—and a strong argument, too. As secretary of war, Mr. Garrison has conducted his department in a common-sense fashion that has enabled him to escape the criticism visited on other less dependable cabinet officers, but the chances are that his two years of official residence at Washington has convinced him that the government has still a long way to go before it can hope to manage certain lines of industry as well as private citizens.

It is likely too, that the opinion expressed in his New York address, has been the subject of discussion at cabinet meetings. Perhaps it would not be far wide of the mark to hazard the view that his remarks indicate the extension of government ownership has been shelved for the remainder of the present administration. If this be true, there certainly will be no objection from the rank and file of the American people for they have shown plainly that they are sick and tired of the presumptuous efforts of small-bore politicians to meddle with the business of the country.

You Don't Belong to the 20th Century

By HERBERT KAUFMAN

What are you doing in the twentieth century? You went out of style when electricity came into use. Once we gave heed to you, but that was when we believed only in things which we could see and handle. Then superstition guided imagination and intolerance shortened our perspective.

In an age of bigots, you would have found willing ears and an approbative audience. But now we have no time to waste upon you. We cannot hear your pessimism. Our ears are filled with the chirping of pneumatic crickets riveting steel beams, 50 stories overhead—with the chugging of rock drills—with the whir of dynamos and the buzz of the trolley—the crackle of wireless telegraphy and the tingling of telephone bells.

The earth is eager with new impulses. Man has entered a higher estate, but you refuse to behold it. While we scan the heavens for further planets, you search for fallen stars. Nothing is perfect. Even the sun has its spots, but they are outbalanced by its light. The world is filled with wrong and injustice and cruelty. The strong continue to capitalize their opportunities. The hard taskmaker still wrenches the last drop of sweat and surge of strength from his people.

There's many a stain and smirch on the robe of morality. But you misinterpret the widespread awakening to social truths. You translate the sweep of reform into a wave of destruction.

When a nation acknowledges its economic inequalities, frankly discusses its political corruption and demands higher standards for business, and industry, and living, it is an earnest of better ideals—not an indication of retrogression.

America is on the up-grade. The signs of the times are hopeful. When a commonwealth begins to diagnose its weaknesses, when communities awake to the realization of their shortcomings, better tomorrows are on the way.

The beast in the open has little chance to prey. Intelligence is rapidly destroying the hiding places guarded by Puritanism. We have grown wise enough to perceive that prudery is an ally and abettor of wantonness and disease. But you would have us think that we are losing our battles in the very hour of victory.

The world is constantly growing cleaner and better. The breed is improving. We are gaining strength, physically, mentally, and ethically. The field of opportunity broadens day by day.

The might in right constantly becomes more evident, but the law of competition continues to operate. The best will always prove their superiority over the inferior. No man-made legislation will upset the rule of the survival of fitness. The half-hearted, the sullen, the shiftless, and the witless, can never share equally with the earnest and the determined and the alert and the courageous.

Stop tugging at the coat-tails of progress; you can't delay our advancement. We know that all things are possible to full-hearted ambition, and your pessimism has no weight against the evidence of an ascendant destiny.

Catch the spirit of the hour, or prepare for failure. If you don't believe in your generation, we won't believe in you. We can't get new ideas from a fossil.

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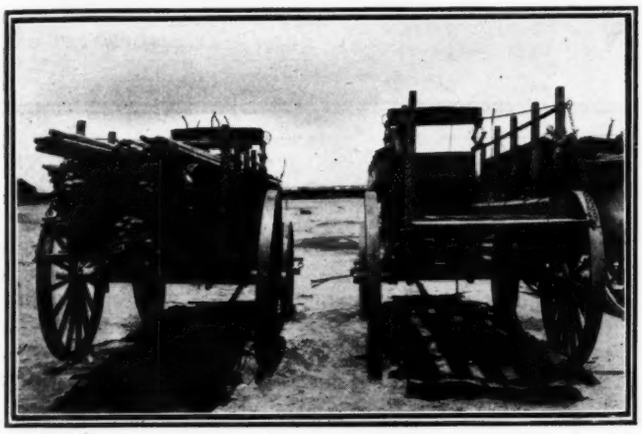
Telephone Apparatus and Practice in the U. S. Army

The Use of Telephone Equipment in the United States Army—The Lines Which this Branch of the Telephone Art Follow—Desirable Pointers Which Can be Obtained and Satisfactorily Applied to Commercial Telephone Practice

By A. P. Connor

Telephone engineering in the United States Army that has to meet the conditions under which the signal corps has to work, is of a peculiar nature, and may be said to be an anomaly. The telephone apparatus has to be light, and at the same time exceptionally substantial, conditions directly opposite in effect. Efficiency and positiveness in the action of the apparatus is imperative, and must be obtainable under the most drastic conditions.

The reason for this practice is caused by the work



Signal Corps Lance Trucks.

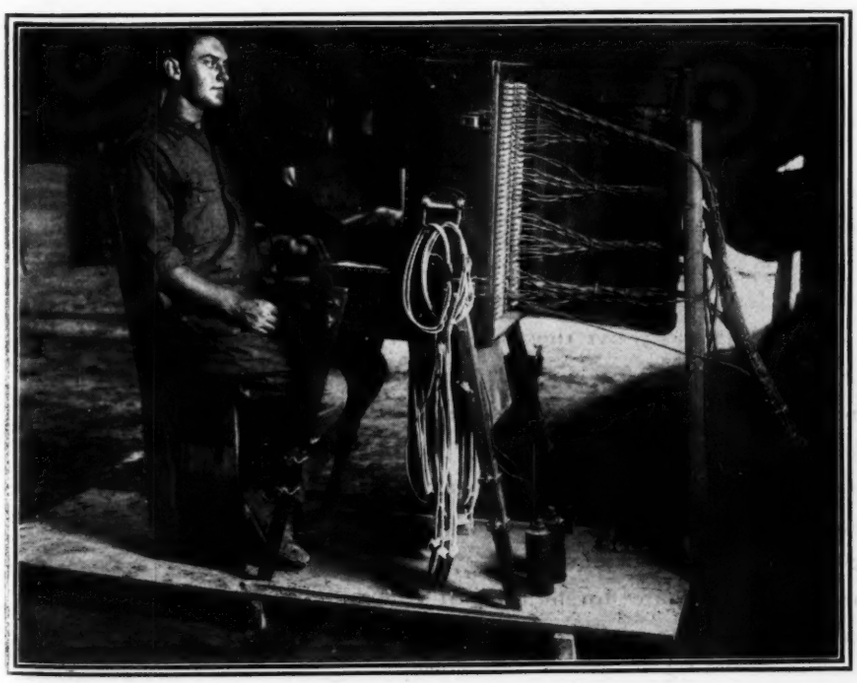
anticipated in warfare. Warfare is full of the "unexpected" and nothing can be definitely relied upon. A soldier may be given a telephone to carry and just as everything is about fixed a bullet will come into contact with the telephone and put it out of commission. The soldier may be killed on the way, or he may be chased and compelled to throw the apparatus away while galloping at full speed. Even then there must be hope that he will be able to return and use the instruments. He may be out all day in a rainstorm, or in a flooded trench, with

Wire Section Company 1, Signal Corps Taking Up Wire.

the instruments, and they must work. Such conditions are not anticipated in commercial practice and the requirements in the manufacture of the commercial instruments are much less severe.

The signal corps of the United States Army has the matter of the telephone apparatus under its care, as well as all other signal apparatus. To this branch of the service great credit is due, because it has discharged its responsibilities with the greatest efficiency. It is all the time increasing and developing its facilities and apparatus, without regard to its previous attainments.

The army telephone apparatus is used in regular telephone communication and with the necessary modifica-

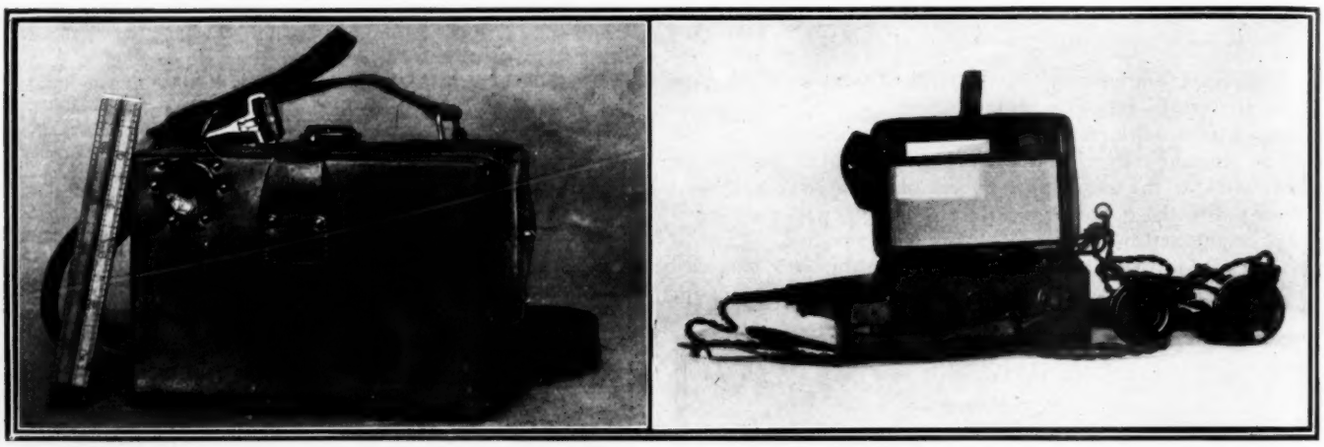


Camp Telephone Switchboard of the Signal Corps—A Camp Telephone Installation.

tions, in wireless work. The wire section requires wire apparatus, and the wireless section requires radio equipment. All must be handled with the greatest speed, in packing up, transportation, and in installation.

The wire telephone equipment may be said to consist of the wire wheel and wagon with the wire, telephones, the switchboard equipment, and the men and animals to do the work in transportation and use. The wire used is a stranded wire with insulation on, and in all, about one-eighth of an inch thick. This wire is placed on a reel or wire-wheel in a special wagon, and troopers follow with suitable lances having loops for holding the wire as it is payed-out or taken in. The wagon is pulled at full speed by horses and the troopers follow guiding the wire onto the ground. The stranded type of wire gives the same great flexibility and strength. It also permits ready connection to be made to it by means of the pin-piercing connectors used for connecting the telephone apparatus to the line. The wire is allowed to drop directly onto the ground, and no difficulty is experienced with it, even on wet ground or similar unfavorable conditions.

The telephone apparatus is packed into a leather case of very compact form, and suitable straps are provided for carrying it from the shoulders. A general idea of its size in comparison with an ordinary folding rule may be obtained from one of the accompanying illustrations. In the view showing the interior of the case may be seen the telegraph apparatus also used. The connectors for attaching to the line wires are also shown.



Service Buzzer, Closed and Open.

The switchboard used by the United States signal corps is characteristic for its compactness and portability. It also is equipped in a suitable leather case and provided with legs to stand on. It can be set up in about a minute and packed in about as short a time. These switchboards are principally intended for the camps, but conditions may make their use desirable elsewhere.

The camp telephone is a simple but efficient instrument, the microphone type being used. The instrument box is supported on a shelf of the simplest nature, as may be noted in one of the illustrations. All the apparatus is arranged for quick use and packing up. It is made on fool-proof principles and to stand rough handling.

Radio Section Field Company D., Signal Corps.

The wireless section of the signal corps has its wagons for carrying the lances to make the aerial masts. Two of these are shown in the illustrations, one empty and one full of lances. Speed in installation is here arranged for. This may be appreciated when it is learned that the time taken to erect a radio station with a 40-foot mast, takes one and a half minutes. This efficiency of action is greatly due to the military system and training under which the soldiers work. The apparatus cannot be described in detail, except that it is designed on similar lines to that used for the wire telephone lines, being compact, mounted in leather cases and made for rugged usage and conditions.

The illustrations are from photographs in connection with actual service near the borders of Mexico. For that reason, alone, they are particularly interesting. The apparatus has proven adequate to meet the conditions under which it has been used. Endeavors now are being directed to apparatus of greater utility and many more new features will be introduced. While they cannot be described at this time, they are developed on lines to meet new conditions which have arisen in the line of warfare practice.

Girls to Replace Male Night Operators in London.

As a result of the war the British government is trying a new plan with regard to its telephone service. Girls are being employed instead of male operators in many of the London exchanges. Considerable trouble has been experienced by the government in the matter of male labor for the telephone service. A great number of operators are serving with the colors. Temporary operators who were employed when the regular telephone operators went to the front, have since enlisted and those who received preliminary training with the service went out to France as field telephone workers.

Controller A. Berlyn says the only way out of the difficulty is to employ girls for night work. While, of course, this is nothing new in the United States, it apparently is here, says TELEPHONY's London correspondent. Selected girl candidates are first to be trained at a day school, and then to be passed out to the exchanges as they become efficient. The waste of labor in training these girls will not be so pronounced as it was in the case of the men who later went to the front. Controller Berlyn says he has arranged to pay the girls 22s. ($5.50) a week, during training and 24s. ($6) a week when they become regular operators. The girls will work 48 hours a week. Beds will be provided and they will be allowed two hours rest or sleep in rotation during the night with half an hour for supper and a similar period for breakfast. They will report for duty at 8 p. m. and leave at 8 a. m. and will be on duty four nights a week out of seven. Hundreds of applications are being received for the work, candidates from 21 to 35 years being eligible. The candidates will have to pass medical examinations.

Annual Meeting of the A. I. E. E.

The 309th meeting of the American Institute of Electrical Engineers will be held in the auditorium of the Engineering Societies Building, 33 West 39th Street, New York, on Tuesday, May 18. This is the regular annual business meeting of the Institute, at which the board of directors will present its report for the fiscal year ending April 30, 1915. Copies of the report will be distributed and will include a detailed statement of the financial status of the Institute and a summary of the work accomplished by the standing and special committees during the year. The committee of tellers will present its report on the result of the election of officers for the coming administrative year.

Following the business meeting will be the presentation of the Edison Medal to Dr. Alexander Graham Bell. The presentation address will be made by John J. Carty, chief engineer of the American Telephone & Telegraph Co.

An address will then be given on "How Bell Invented the Telephone" by Thomas A. Watson, who was associated with Dr. Bell in the early development of the telephone. Members of the New York Telephone Society are invited to attend this meeting. As the subject is one of general interest, ladies will be cordially welcome.

United Home, of Muskegon, to Make Large Bond Issue.

An issue of $200,000 6 per cent. 20 year gold bonds has been underwritten by the Grand Rapids, Mich., Trust Co. for the United Home Telephone Co., of Muskegon, Mich. The total authorized issue, as approved some time ago by the Michigan Railroad Commission, is $500,000. and is to cover the expense of rebuilding and extending the plant, erecting a new exchange building in Muskegon and installing automatic telephones.

The bonds are in denominations of $100, $500 and $1,000 and are redeemable at any interest period at 102. The bonds will be marketed at par. The company has 754 miles of toll lines and operates exchanges in 15 cities and towns, with a total of about 5,400 telephones. The inventory of the physical property is given at upwards of $650,000.

Interesting Telephone Device at Exposition.

The telephone plays its part in the amusement features at the Panama-Pacific Exposition at San Francisco, and especially in that known as the Panama Canal. This attraction which covers five acres of ground, is viewed from a moving platform which passes around the exhibit.

It would be impossible for a lecturer to be heard by all the audience, so a telephonic-phonographic system has been devised by means of which each person receives his own independent lecture as he travels past the various objects of interest. Telephone receivers are attached to each chair and by an electrical attachment on the lower side of the platform, the entire lecture zone is covered without a single break.

New Telephone Directory for New York City.

The New York City telephone directory, which has just recently been issued, contains 350,000 listings for 566,000 telephones in the city. The directory has 970 pages, and an edition of 610,000 copies has been distributed by a force of 500 men.

In addition to the list of telephone subscribers, the directory contains information about public buildings, the location of piers, subway and elevated railway stations and notes of historic interest in the city.

New Exchange Building for Superior, Wis.

It is expected that work will be commenced before June 1 on the new exchange building to be erected by the Wisconsin Telephone Co., in Superior, Wis. The building will be a three-story fireproof structure and will cost approximately $150,000. The new exchange will replace the present Broad street quarters which have become inadequate to meet the demand for telephone service. The Wisconsin company now operates a total of 3,200 telephones in Superior.

Anniversary Payments Received by Telephone Employes.

During the year 1914, 3,675 employes of the New York Telephone Co. received bonuses proportionate to the length of time in the company's employ. The bonuses are called anniversary payments, being given to the employes upon the anniversary of the day on which they entered the company's service. Payments of $25 each were received by 728 employes, $50 by 1,690 and $100 bonuses were received by 1,257 employes.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

The answer to these questions will be found in the reading section bearing the same number. Answers are not to be sent to TELEPHONY for criticism. For the benefit of those desiring the advantages of a correspondence course, the Engineering Extension Department of the Iowa State College has volunteered to answer questions and criticize replies to questions and solutions of the problems which will be presented from time to time in connection with the course. No charge will be made for this service and the offer applies to all subscribers of TELEPHONY regardless of whether they live in Iowa or elsewhere. Correspondence should be addressed to the Engineering Extension Department, Iowa State College, Ames, Iowa.

107. What is the difference in principle between the tuned type of ringer and the standard type of polarized ringer?

108. What is the essential difference between tuned ringers for different parties on the same line?

109. Explain why 33 1-3-cycle ringing current does not operate the 16 2-3-cycle ringer.

110. Name the advantages of the tuned type of ringer for selective calling.

111. Why did early experimenters connect the instruments in series with the line and battery?

112. Explain why the transmission is better on a short series circuit than on a long one regardless of the possible use of a higher battery voltage.

Problem Number Two.

The Home Telephone Co., of Fosterburg, secured a very large number of subscribers soon after the installation of its plant. Largely owing to the careful and efficient work of the wire chief, the company made many friends and its service was deservedly popular. The telephone company at Smithville, on the other hand, was struggling along with a small list of subscribers and a small but very busy switchboard.

On 60 lines at Smithville the company was trying to give service to 200 subscribers. Only 20 of the lines were metallic individual lines in the city, the remainder consisting of four-party grounded city lines and grounded rural lines. Code ringing was used on all party lines. This company had toll connections with Fosterburg, but the transmission was not very satisfactory and the Home company of Fosterburg for that reason did not push the development of this business.

The president of the Smithville Telephone Co. was compelled by ill health and old age to leave the city and succeeded in disposing of his stock to the Fosterburg company at a good price, all things considered. This arrangement gave the Fosterburg Home Telephone Co. an opportunity to make any changes necessary to develop this exchange into a valuable feeder for toll business. As a matter of course, the proposition of making improvements was placed in charge of the Fosterburg company's wire chief. He carefully studied the situation and presented his recommendations to the board of directors.

What recommendations would it be advisable to make on the following points, disregarding the question of rates?

1. Should the code ringing on city lines be retained?
2. Should the grounded city lines be rebuilt into metallic circuits?
3. Should the rural lines be rebuilt to metallic?
4. Should a larger switchboard be purchased if the changes mentioned in the preceding questions be made?

For the solution of this problem a general knowledge of the matter contained in sections 77 to 116, TELEPHONY April 3 to May 15, is required. The principles set forth in sections 103 to 116 will be found especially helpful.

CHAPTER VI. The Magneto Set (Cont'd.)

113. *Reason for use of induction coil in telephone circuit.* It is clear that some method by which the circuit, including the transmitter, could be made uniform in resistance; and by which the effect of the variations in its resistance produced by the transmitter, could be multiplied before they were sent out on the line, would obviate the trouble due to the increased resistances of the lines. This method was found to lie in the use of the induction coil. In order to clearly understand the action of the induction coil it will be necessary to again consider the law of electromagnetic induction. The transmitter, battery, and the primary winding of the induction coil are included in one local circuit, while the receiver and the line circuit are included in a circuit with the secondary winding. This is shown in theory in Fig. 42, which is familiar to every telephone man. As the resistance of the transmitter is varied by the sound waves, the variation in the current through it and the primary winding, causes a disturbance in the magnetic circuit

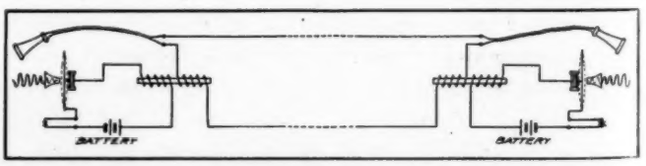


Fig. 42. Circuit Showing Induction Coil Relation.

of the induction coil. This variation in the magnetic flux causes an alternating current electromotive force to be produced in the secondary winding, producing a flow of alternating current which affects the diaphragms of both receivers. The number of turns in the secondary of the induction coil is greater than the number of turns in the primary in order to take advantage of the law governing the production of electromotive force by electromagnetic induction.

114. *Production of electromotive force.* We have seen how a wire that cuts through a magnetic field in such a way as to cut across the lines of force, will produce a flow of current in itself if the circuit is complete. In any case, whether the circuit is complete or not, an electromotive force, or electrical pressure, will be created in the wire under these conditions. It is also true that if the magnetic lines of force are changed around a wire in any way, a current will be produced in the wire if its circuit is complete. Under these conditions an electromotive force will be created in the wire, whether or not the circuit is complete.

As an illustration of the first condition may be mentioned the coil of wire on the armature of a magneto generator when the armature is revolved on its axis. This is illustrated in Fig. 26 (page 31, TELEPHONY, April 10). As the coil is revolved around its axis, the wires composing its winding cut the lines of force of the magnet. It has been explained how a current is produced in the winding. Now the strength of this current will be due to the voltage and the resistance of the entire circuit through which it flows. The resistance can be easily measured and the voltage is determined by a fixed law. Whenever a wire cuts 100,000,000 magnetic lines of force per second, an electromotive force of one volt will be produced in that wire. If the resistance of the wire and the remainder of the circuit through which the induced current flows is one ohm, then one ampere will flow through it. The student should verify this result by an application of Ohm's Law as outlined in TELEPHONY of April 17, page 27.

In the Fig. 26, previously referred to, there are four wires cutting the lines of force; two are at the top of the coil and two at the bottom. These wires are so connected that the electromotive forces in all will be in accord. If the speed of rotation is such that these four wires *each* cut through 25,000,000 lines of force per second, together, they will cut, as a coil, 100,000,000 lines of force per second and an electromotive force of one volt will be produced at the terminals of the windings. In Fig. 26, this would be at the two collecting rings *C* and *D*. The same method of reasoning should be applied to the action of an induction coil or transformer. If the lines of force are inserted into the coils at the rate of 100,000,000 per second, each turn of the coil threaded by the magnetic flux will produce an electromotive force of one volt.

115. *Action of the induction coil.* It will be clear that if the transmitter is in action, it will cause the primary to insert lines of force into the windings of the secondary coil and then to withdraw them; and that a current in one direction will be produced in the secondary when these lines are inserted and in the other direction when they are withdrawn. The voltage produced in the entire secondary winding of the coil will be greater than the voltage change in the primary winding. This is based upon the assumption that the secondary winding has a greater number of turns than the primary winding, which is the standard construction. The greater number of turns has the effect of increasing the number of lines of force threaded by the entire winding, although each turn of the winding is threaded by the same number of lines of force as each individual turn of the primary . It should be noted that the voltage affecting the primary winding is not the voltage of the transmitter battery but is the change in the voltage produced on the primary winding by the action of the transmitter. In order to fix this point clearly in mind, it will be necessary to revert for a moment to the law of current and voltage. (Ohm's Law.)

We have seen that in any electrical circuit the voltage or pressure is equal to the amperes multiplied by the ohms. Let us assume that the resistance of the primary winding of the induction coil has a value of two ohms. It was shown under the conditions assumed in section 96, that if the transmitter has a resistance when normal of 40 ohms, there will be a current of 1/14th ampere (0.07) in the primary circuit. In fixing the value of this current in amperes we have, for the sake of simplicity, neglected to consider the internal resistance of the battery, the resistance of the telephone wiring, etc. In an application of Ohm's Law *to the primary winding only,* we find a current of 1/14th ampere (0.07) when the transmitter is normal. A resistance of two ohms will therefore show a voltage around the terminals of the *primary winding* alone of 1/14th $\times$ 2 or 1/7th volt (0.14).

Now let us take the case when the transmitter, owing to the action of the sound waves, shows a resistance of only 30 ohms. For this illustration we may use the values of current through the primary circuit fixed in section 96. In this case, according to Ohm's Law the voltage around the terminals of the primary winding is 3/32 $\times$ 2 or 3/16th volt (0.19). When, owing to the same reason, the transmitter shows the higher resistance of 60 ohms assumed in section 96, the voltage around the terminals of the primary winding will be equal to 3/62 $\times$ 2 or 3/31 volt (0.10).

These results may be placed in a table as follows:

Condition of Transmitter	Amperes	Volts Around Primary Winding	Change in Volts
Normal	0.07	0.14	
Inward	0.09	0.19	0.05
Outward	0.05	0.10	0.04

From this table it can be very readily seen that the *change* in voltage at the *terminals* of the primary winding is from 0.05 *above* to 0.04 *below* the normal. The voltage in the primary winding will also have all the intermediate values between. In other words the action of the transmitter under the conditions we have assumed, causes a variation of 0.05 plus 0.04 volts, or 0.09 volts, for one complete sound wave. If the secondary winding should have six times as many turns as the primary under these conditions, the voltage produced at the terminals of the secondary winding would evidently be much greater than this. The wide variation in the exact nature of the current changes produced in the primary winding, the magentic circuit of the induction coil, and the frequency, all have a qualifying effect on the secondary voltage. In the case

of any induction coil, the secondary voltage for certain tones would have one value and for other tones another.

Experience has fixed the most efficient proportions for the relative number of turns in the primary and secondary. If the primary voltage followed a regular law of variation, known as the sine law, and if the amount of iron in the magnetic circuit were correctly determined, the secondary voltage would be equal to the primary voltage multiplied by the ratio between the number of turns in the primary and the number of turns in the secondary. This condition cannot be said to prevail in the case of the telephone induction coil for the frequencies are too irregular and the variations in the primary current too erratic.

116. *Summary of reasons for use of induction coil.* The reasons then that render the induction coil necessary in a telephone circuit, are as follows:

First, to render it possible to maintain the transmitter and battery circuit at a low and constant resistance regardless of the length of the telephone line.

Second, to transform the *undulating* current produced by the action of the transmitter into an alternating current which will have a more *pronounced* effect on the magnetic circuit of the distant receiver, and therefore upon the receiver's power of reproducing sound.

Third, by a greater number of turns in the secondary compared with the primary, to increase the voltage of the alternating voice currents sent to the distant station, in order to give a wider range to satisfactory transmission.

(To be Continued)

Annual Report of Thomasville, Ga., Company.

The annual report of the Consolidated Telephone & Telegraph Co., of Thomasville, Ga., for the year ending December 31, 1914, shows a gross operating revenue of $39,236.64. Adding the revenue from other sources, makes a gross revenue of $39,669.12. The operating expenses were $23,869.56, leaving net earnings to the amount of $15,799.56. Deducting $1,989.69 for expenses other than operating, leaves a net income of $13,809.87. The income and expense statement follows:

GROSS EARNINGS.		
Gross revenue operations	$39,236.64	
Revenue other than from operations	432.49	
Total revenue from all sources		$39,669.12
OPERATING EXPENSES.		
Salaries of general officers	3,100.00	
Salaries of all other employes	10,314.82	
Maintenance of equipment	4,261.36	
All other operating expenses	6,193.38	
		23,869.56
Net earnings		15,799.56
Taxes	737.57	
Rentals paid	1,252.12	
Total expenses other than operating		1,989.69
Net income over operating expenses, taxes and rent		$13,809.87

At its annual meeting an 8 per cent. dividend was declared and the following officers were elected for the ensuing year: James Watt, president; R. L. Stewart, vice-president and general manager; J. C. Pringle, secretary and treasurer; E. A. Dawes, auditor.

At this meeting the company increased its capital stock by $32,000, for improvements and extensions to be made during the year 1915. The new issue has just been approved by the Railroad Commission of Georgia.

Earnings of Rochester Telephone Co. for First Quarter.

The gross income of the Rochester Telephone Co., of Rochester, N. Y., for the first quarter of this year shows an increase of $2,635.55 over the same period of 1914, according to a report presented at the monthly meeting of the board of directors.

The net earnings for the first three months of this year show a falling off of $559.53, as compared with the same period of 1914. This slight decrease, it is said, comes as a result of extensive repairs made at the Stone street exchange and charged against the current income account. The net earnings for the first quarter of this year amounted to $33,129.17, as compared with $33,688.70 last year.

The other figures are as follows:

	First Quarter 1915	First Quarter 1914
Gross revenues	$122,026.80	$119,391.25
Operating expenses	75,518.88	72,315.63
Net operating income	46,507.92	47,075.62
Bond interest	13,378.75	13,886.92

Monthly Report of Keystone Telephone Co.

The Keystone Telephone Co., of Philadelphia, Pa., has issued its comparative statement of earnings for the combined companies for the month ended April 30, 1915, and the four months ended April 30, 1915, as follows:

	For Month Ended		For Four Months Ended	
	Apr. 30, 1915	Year Previous	Apr. 30, 1915	Year Previous
Gross earnings	$112,666	$110,351	$443,729	$433,997
Operating expenses and taxes	55,109	53,699	221,502	214,231
Net earnings	57,557	56,652	222,227	219,766
Less interest charges	26,496	25,511	105,608	103,860
Net surplus	31,061	31,141	116,619	115,906

Tri-State Operators Hold May Festival.

The telephone operators of the Tri-State Telephone & Telegraph Co., of Minneapolis, Minn., took advantage of the new addition added to the Merriam Park exchange in which the automatic equipment is to be installed, and held a May Day party and dance there last Saturday.

There were two parties, one in the afternoon for the girls who work at night and one in the evening for the day operators. Several "stunts," including a minstrel show by the long distance operators at the Merriam Park exchange, an amateur theatrical entitled "Lord Ullin's Daughter," a May Day queen contest and music by the Tri-State orchestra made up the entertainment.

Two May Day queens were crowned in the afternoon and two in the evening. The queens in the afternoon party were Miss Neva Haynes, of St. Paul, and Miss Abbie Rogers, of the Calhoun exchange. The evening queens were Miss Josephine Von Trat, of East St. Paul, and Miss Mildred Formoe, of Minneapolis.

Seven hundred girls attended the two parties. Dancing and refreshments concluded the entertainments. The exchange building was doubled in size to give more space for the new equipment that will be necessary when the automatic telephones are installed. Automatic equipment is being installed now in the Snelling, Grove, Spruce and South St. Paul exchanges of the company. The automatic system will not be in active operation for about a year.

Town Council to Operate Government Exchange.

By arrangement with postmaster general of the union of South Africa, the Durban town council has agreed to take over and manage the government trunk telephone exchange at Durban. The telephone system there already is a municipal undertaking.

Tinnitus

A New Danger—A New Possibility

By J. C. Kelsey

As I write, I am in a courtroom. I am waiting my turn to take the witness stand. It is a typical courtroom in a typical American community. There are few spectators, few witnesses, although the courtroom is full.

In one respect the court is typical. It believes in reserves for there are enough men waiting under charge of the sheriff to make three or four juries. It matters not if crops call, the cattle need feeding, the family is lonesome or what, the stern band of justice holds these unused reserves with little less restraint than if they were hardened offenders.

The jury is a typical one. First, eighteen men were called. But each contending side had the privilege of rejecting three men, which they promptly did. Guessing at what a juror will or will not do, is about the greatest thrill a lawyer gets until he collects his fees. Here and there are merchants of the town, but in the main, the jury is composed of farmers.

Somehow there is a great American fiction that farmers are ideal jurors because they are the only people, as a whole, who read and think. Somehow the great American notion has arisen that a farmer has nothing to do but to sit by his fireside and read Herbert Spencer.

Somehow he is denied the right to read and think about grains, pigs, machinery and such—and to have unlimited periodicals of fiction and folly to read. And by this notion he has thus attained the enviable reputation of being the most qualified jury man.

Somehow he is supposed to hate trusts. Further it is presumed that no corporation has any chance under his withering eye. He is said to despise experts, and accordingly complainants largely seek his services on the jury.

By the same token, the defendant corporation lawyers are supposed to fear him and to bend all their efforts toward a non-suit of the case, or by some hook or crook to take it away from this corporation-devouring jury.

Another piece of fiction is that a farm jury is especially good when someone has been injured, or alleged to be, through the intricate movements of an electric current.

Somehow when an electrical case comes up, all signs fail. Electricity seems to be the nightmare of the courts. Law has not yet decided that electricity is as well controlled as steam and water, if not better.

In the minds of the law, electricity is still a lawless infant, raging hither and thither, seeking whom it may devour. To hear the average complainant in an electrical case, the actions of electricity are truly weird, uncontrolled and still misunderstood by human beings.

In court the feeblest electrical current becomes a roaring Niagara of destruction. A poor harmless telephone current vies with the lightning in its path of death. An ordinary ringing current from a pole changer assumes the proportion of a 20,000-horsepower dynamo, and scatters death as freely as a German gas bomb.

Accordingly, the electrical expert, who merely tries to confine electrical habits to where they belong, is looked upon as a dangerous theorist; a monumental liar from the city, paid to lie and thereby defeat honest justice, or if not, to be in actual league with the powers of darkness.

If a man went before this so-called typical jury, and upon oath would make a statement that a man could shovel ear corn into a corn sheller and it would come out as wheat, the whole courtroom would throb with pity at the poor weakened mind.

But a man can go into court and under oath allege that electricity will do things equally impossible, and he will "get away with it," as they say in slang. He can tell the jury that your pole changer will run a street car, or that as he was walking along your line, a mysterious tongue of flame jumped from your line as the operator rang, and it will be given credence.

It makes no difference whether a qualified expert denies the fact, and actually proves that your pole changer will not heat the filament of a 16 candle power lamp, the complainant's story gets the benefit.

It makes one realize how the hopeless girl in old New England felt when some Puritan pretended to describe her antics as a witch. Truly, electrical cases in American courts have reached no higher plane than that of a rank trial of witchcraft.

This particular case should interest you. The subscriber was on a four-party line, and he called a party on the same line. The operator asked him to hang up the receiver so that she could call the other party.

After a space of time, the complainant removed the receiver from the hook. As he placed the receiver to his ear, the operator did then and there project a dangerous (?) current into the aforesaid receiver and the noise of which did make the complainant hold his ear, rub it, and otherwise try to get back to earth.

The aggrieved party went to the company. He showed his ear, and told his story. After a few months, he commenced to get angry about it and sued for $5,000.

There are 10,000,000 telephones in America. Each of these telephone subscribers uses his telephone from five to seven times a day.

Think of it! 50,000,000 times a day, called subscribers take their telephone receivers from the hook and place them to their ears. Now think of another thing. Suppose each subscriber got $5,000 worth of ear damage, how long would our business last?

I see now a fine scheme for the government to take over the telephone business. Let each subscriber receive an ear ringing, and sue simultaneously for $5,000. The companies would gladly relinquish the property, and the aggrieved subscribers with damaged ears could donate it to the government. No one else could pay the damages.

It remained for this obscure man to show something new to the world. He is trying to show the world that a telephone receiver is a dangerous thing and a menace to the ears of the public.

Suppose he wins his case. If he does, then the telephone industry, if all the testimony regarding the willful carelessness of electricity can be believed, stands to be sued for just fifty billion dollars.

Now the aggrieved party has been a sufferer from deafness and ear trouble for fifteen or twenty years. He confessed that he had half hearing on the left, and one-sixth on the right.

Yet after this willful and outrageous death-dealing ringing current had passed through the receiver, the one-sixth ear had joined the one-half ear in equality. And from that time on, he had been a sufferer from a terrible ear disease, due entirely

to the negligence of a telephone operator in not controlling this dangerous current.

Now he hears the sound of steam, he hears whistles, he hears saws buzz loudly and feels at times as if a steam radiator were in his head and a plumber had gone in to fix it. In other words, from that deadly ringing current, which cannot heat the filament of one lone lamp, he got *tinnitus* and valued it at $5,000.

Steam railways have parallel interurbans; gas light has its electricity; street cars have their "jitneys." Almost every form of industry has some all devouring bird clawing at its vitals. Some have plain names and others have high sounding Latin names. But it remains for the telephone parasite to get a proud name. Get all your subscribers into the secret. They may have tinnitus, and you gave it to them.

Every telephone subscriber now has a $5,000 prize in his grasp. All he has to do is to have his family see him jump suddenly, clasp his hand to his ear, and the money is his.

All he will have to do is go into court and tell a fanciful story of electrical witchcraft to a typical jury, while you issue $5,000 of additional stock or bonds, and go without dividends so that your lawyers and experts may get their pay. It is a wonderful opportunity to the American public. They now have ten million telephones where any one can try it.

What is tinnitus? Have you ever taken a large dose of quinine? You have heard the roaring noises of bedlam. That is what the disease of tinnitus does permanently.

You can get tinnitus by taking drugs such as headache powders, and salicylic acid in your food may make you think you hear buzz saws and fog horns. Bright's disease, gout and almost any blood disease will cause the same thing.

But it remains for a financial genius to capitalize the disease for $5,000. Possibly the jury may have some idea of a reward for ingenuity if they award him that money.

This matter is not a joke. There are ridiculous things about it. It is ridiculous to think that a broken-down man, suffering from chronic ear trouble, can make a telephone corporation so much trouble.

But it can be done and no company is exempt from being compelled to defend itself at great expense. The court requiries lawyers and experts, yet you may have the results of their efforts entirely ignored because you are dealing with electricity.

It is a serious situation and one which might destroy our business. A wrong decision might give rise to the potentiality that every subscriber you have, can make you pay him $5,000.

In spite of all the precautions you may take, in spite of work done by skilled men who have designed the apparatus, in spite of the anticipation of every accident which may happen, a wrong decision in this court may give even the diseased subscribers of your telephone exchange the opportunity of calling upon you for $5,000.

It looks now as if we will be compelled to ask our subscribers to submit to a physical examination, and give us in detail, a history of the family ears, as well as other parts, clear back to the time that men shot arrows at one another.

We may be compelled, further, to ask our subscribers to submit to a course of training for their ears, or we can't go ahead with the telephone business. We have done the best we could to make the use of a telephone a matter of safety.

Other companies exercise care in the selection of their business. Insurance companies will not take on a cripple in any form. Once I asked for an accident policy on a train when I bought my ticket. The agent happened to see my broken arm, all bandaged up, and he declined to sell me a ticket.

In other words, the company knows that a man with a broken arm could not ride through a wreck or small normal trouble without getting more damaged than a man with a normally healthy arm. So must we, if this decision goes wrong, set about not to give service to telephone subscribers who cannot reveal a normal ear. We must refuse to give service to people who cannot ride through so-called feeble yet normal accidents without disaster.

The facts are that no healthy ear could be given tinnitus by listening to a receiver with generator current passing through it.

Granted that such an accident happens, it would possibly irritate a subscriber but would only cause him to lose his temper and not his hearing.

Electricity is said to be in its infancy. Such a statement always offends an electrical man. Only novices or those unfamiliar with its actions ever give voice to such an idea.

There are still those who associate electricity with all that is mysterious. Among these benighted people the law itself seems to stand out clearly, wrapped in the cloak of ignorance, superstition and darkness.

I have naturally overdrawn the potentialities of a wrong decision in this case. But let telephone men make up their minds that if such a decision went astray and became common property, our pathway would be strewn with a new set of thorns.

MORAL: Capitalizing natural misfortunes is clever.

P. S. The jury awarded $2,500.

Merger of Competing Plants in Marlin, Texas.

The Texas Telephone Co., which recently purchased the local plant of the Southwestern Telegraph & Telephone Co., in Marlin, Texas, completed the merger of the two plants May 1. The merger was authorized by the city of Marlin last November, the sentiment of the citizens being practically unanimous in favor of the elimination of one of the two exchanges. So strongly was the feeling in favor of the consolidation that the Marlin daily paper issued an extra "Telephone Merger Edition" Saturday night.

Marlin is a city of 5,000 inhabitants. The rate for business telephones is increased from $3 to $3.50 after the merger, the residence rate remaining at $2. One hundred and thirty-seven duplicate telephones are eliminated by the merger, resulting in a net saving to the telephone users of Marlin of about $4,000 per year. The Southwestern company will maintain a toll office in Marlin, trunking to the local exchange.

Similar mergers have been authorized in the territory of the Texas Telephone Co., at Waco, Walnut Springs, Meridian, Clifton and Ennis, and are under advisement at other places.

Electric Buzzer Helps to Catch Pay-Station Thief.

The electric buzzer which the Cumberland Telephone & Telegraph Co. had installed in the pay-station at the Third street interurban station, at Louisville, Ky., following a number of visits of thieves to the box, recently served to catch an alleged thief. This buzzer had been arranged so that when the lock was broken, a signal would be given to the station master.

One night recently the station master received the signal, whereupon he hurried to the pay station to investigate. He found a man in the booth engaged in removing the coins from the coin box, the lock having been forced. The station master held the man until the police arrived, and the thief is now being held for trial.

Operator's School at Dixon, Ill.

A school of instruction for telephone operators was held on Tuesday and Wednesday of this week, May 11 and 12, in Dixon, Ill., under the auspices of the Dixon Home Telephone Co. W. S. Vivian, secretary of the Independent Telephone Association of America, was in charge of the meetings.

Benefits of Commission Control of Telephone Business

Review of Public Utility Regulation in Michigan—Provisions of Present Law—Analysis of the Five Ways in Which Telephone Companies are Affected—Protection Afforded by the Law—Paper Read Before Independent Telephone Association of Michigan

By A. H. McMillan

In order thoughtfully to consider the advantages of the regulation of the telephone business in the state of Michigan by a commission appointed by the state for that purpose, we should first see, in a brief and general way, what the provisions of the state law are that provide for such regulation. The state railroad commission had existed for a number of years with jurisdiction over railroads. In 1909 the jurisdiction of that commission was extended so as to include telephone companies. The amendment of that year required telephone companies to obtain the permission of the railroad commission before they could lawfully issue stocks, bonds, notes or other evidences of indebtedness, payable at periods of more than twelve months from date thereof.

This act was amended in 1911 and given the form it now has. In 1911 an act was passed declaring telephone lines and telephone companies to be common carriers and providing for the regulation thereof. The act was completely revised in 1913 and put in its present form. This statute declares all persons, co-partnerships, corporations and associations operating telephone lines or exchanges in the state to be common carriers, and places them under the control of the commission. It requires them all to furnish reasonably adequate service and facilities for the use of their lines by the public and makes it their duty to charge reasonable and just rates for such service, giving the commission power to make, alter, amend or abolish any rate or charge for any service and to regulate by rules or orders any service or facility.

The law likewise gives the commission power to order a physical connection between companies the lines of which, by such connection, can be made to carry a continuous line of communication, when public convenience and necessity will be subserved thereby, and supplementary to such physical connection the commission may prescribe joint rates, tolls and charges to be observed. The law also requires permission of the commission and a finding of public convenience and necessity in order to make lawful a sale or lease of telephone lines or facilities or any part thereof by one company to any other company in the state. A certificate of public convenience and necessity is also required before a franchise can be obtained to construct a telephone system in any municipality in the state, and in granting such certificate, the commission has authority to fix the rates, tolls, rentals and charges to be imposed in the event of the construction of such lines.

No increase of rates or alteration of any classification, contract, practice, rule or regulation so as to result in any increase in rates may be made except after a finding by the commission that such increase is justified. The commission has authority, either upon its own motion or upon the complaint of any person, co-partnership, association, corporation, body or municipal corporation, to hear and determine all complaints against rates or service by any person or company under the terms of the act. The commission further has authority to prescribe the manner in which records and accounts shall be kept by telephone companies in the state.

Schedules of rates, charges and tolls are required to be filed with the commission and companies are required to have such schedules on file and accessible to the public in the principal place of business of the telephone company or party engaged in such business. There are also provisions for appeals from the commission to the courts and other provisions in order to give the entire act practical effect. Adoption of these laws came about as a result of a demand by the public for regulation of the telephone business. The commission control was at first, I believe, not favored by telephone companies. The attitude of such companies has now changed and they are, with very few exceptions, heartily in favor of state regulation of their business through a commission. Commissions are in charge of the business in many other states of the union, every where, so far as I can learn, with satisfactory results.

It will be seen that there are two interests affected by the operation and regulation of the telephone business, first, the general public and second, the companies themselves. Under the head of the public we will consider as included subscribers and patrons of telephone companies; under the head of companies we will include their stock and bond holders.

We will also find by an analysis of the law, as above outlined, that the control of the business by the commission affects the companies in five different particulars:

1. The requirement of a certificate of public convenience and necessity before a franchise to do a telephone business may be obtained.
2. The approval of the railroad commission before stock, bonds and securities may be issued.
3. The requirement of reasonable, adequate service and facilities under the supervision of the commission.
4. The requirement of reasonable and just rates with the commission's approval.
5. The permission of the commission and a finding of public convenience and necessity before a sale or lease of any telephone line or facilities, or any part thereof may be lawfully made in the state.

Let us discuss each one of these different particulars in which the telephone business is affected by commission control and see whether the approval that the telephone companies have given the law is justifiable. In so doing we will observe if the company and the public is benefited or injured in each case.

1. Certificate of Public Convenience.

The requirement of a certificate of public convenience and necessity before a franchise may be obtained is of benefit to the public insofar as it tends to protect it from duplication of service. The merchant or professional man objects to having two or more telephones in his place of business, because of the number of other people who likewise have to have two telephones, thus causing a certain amount of expensive duplication. The public is also protected by the restraint that is thus imposed upon public bodies which are prevented from granting franchises to mere speculators or to companies that establish lines on insecure financial footing, with the likelihood of failure and subsequent loss to subscribers and creditors.

On the other hand, the disadvantage of the requirement of this certificate is that it may in some instances be withheld where new companies are actually needed and competition which would actually benefit the public be thus prevented. This possible objection I do not think applies in the state of Michigan or to any state where there are two such firmly

established and vigilant competing telephone systems in operation as we have here. Also I may add that there is no such danger where we have such public spirited and honorable members on our commission as we have in the state of Michigan.

So far as the companies are concerned the certificate of public conveyance and necessity protects vested interests and saves the established line from competition where the needs of the public do not justify it. It also prevents the companies from being held up by speculators who threaten to establish competing lines merely for the purpose of selling out to the already established one.

2. Stocks, Bonds and Securities.

The sanction of the commission preliminary to the issuance of stocks, bonds and securities is a benefit to the public because, as possible purchasers and investors, they are protected from watered stock, inflated values and merely speculative ventures. As telephone users the public by this requirement is protected from business failures in consequence of rash extensions and the diversion of the proceeds of the sales of securities away from the avowed objects of their use, such as for improvements, extensions, and increased facilities.

In a corresponding way this provision is a benefit to the companies because it gives added value to the securities when the authority of the railroad commission is once obtained. The stock and bondholders of companies are also protected, when they invest additional funds in telephone securities by being given the assurance that their money must be used where they intend it to be. This provision could, of course, be made a handicap and a hindrance to a telephone company by being unfairly administered, but such administration we have not had and do not expect ever to have in this state.

3. Service and Facilities.

Here we believe is the greatest benefit to the public. Subscribers are more interested in good service and proper facilities than in any other feature of the telephone business. If they get them, they will grant franchises, buy securities, approve sales and leases and pay substantial rates. If they do not get good service and extensive facilities, they will object to franchises, refuse to buy securities, kick on their rates, criticize sales and leases and hate and abuse the telephone business generally. Hence, this provision enables the public to get its money's worth and saves it from fretfulness and nervous worry. It also tends to make subscribers staunch supporters and friends of the telephone business generally.

The advisability of compulsory physical connection has been much discussed and objected to on various grounds, but so far as the public is concerned it can only be an advantage when granted, as required by the statute, when "public convenience and necessity will be subserved thereby." As to the companies, a sound business policy must approve of the requirement for reasonably adequate service, facilities and their supervision by the commission. Certainly every company wishes its connecting companies to be required to give such service. Hence, it ought not to object if it is itself required to do likewise. Sound business policy teaches that good service and proper facilities strengthen the company's standing and bring the financial rewards that it seeks. It is certainly a great advantage to every company to have its patrons satisfied friends of the business instead of its hostle critics.

4. Rates.

From the public point of view, rate regulation, if kept within the bounds of reason, so that the companies are allowed a proper profit, is a great blessing. The public is thus saved from monopoly, such as once oppressed it in this state. Yet rate regulation does not seem to me so important to the public as some of the other provisions we have already discussed. With unrestrained competition, rates tend to be automatically adjusted. It was the high rates and poor service of the Bell company that brought about the great Independent development in this state. But from the point of view of the company it seems to me that rate regulation is a decided advantage. It protects the company from the exactions of demagogic lawmakers. It gives the company the benefit of the public confidence in the justice of its rates. Last, but by no means least, it protects the companies from their own management.

I know a company in this state that got a franchise when it did not need one and in the franchise agreed to a rate that subsequently proved inadequate. Had the matter of rates, then as now, been left entirely with the commission, the franchise would have contained no agreement on the subject and when the company's service increased in value and expensiveness the company could have charged the rate therefor that it deserved.

In Wisconsin it has been held that the statute that gives the railroad commission jurisdiction over rates supersedes any local franchise provisions restricting or limiting rates. I do not know that the courts of Michigan would follow such a holding, or that our law would justify it, as the Wisconsin law certainly did, but such a construction of our law would be a great relief to some of the companies of this state by removing the millstones that promoters tied about their necks.

5. Sales and Leases.

The provision requiring a finding of public necessity and convenience, before a sale or lease from one telephone company to another can lawfully be made, can be justified upon similar grounds to those which justify a similar certificate before a franchise from a municipality can be obtained, although the reasons for it are not so general. The public is thus protected against a monopoly accomplished by the purchase or leasing of competitors. The companies are protected from having their connecting companies bought up or leased by ambitious rivals.

The company that wants to expand may find in this provision an obstacle unless the law be fairly and impartially administered as we believe it has been. This provision is also a protection of both public and companies from rash financiering. It also acts as a safety valve which saves the companies and the public from the passage of foolish and drastic laws by the legislature.

We have now considered many of the ways in which the public and the companies are affected by the commission regulation as now established in this state. It will be noted that as a general proposition what was a benefit to the companies was a benefit to the public likewise and what protected the public strengthened and established the companies. In other words the interest of companies and public are mutual. For value received by the public the company will get value returned to it in the shape of friendship, support and profits. Likewise by treating the companies well, the public will be rewarded by good service, and sound business as well as by reasonable rates.

Everywhere it appears that the law is good if properly administered. Not only must the administration be fair, just and impartial but it must be prompt. If applications made to the commission are given a speedy decision, half the sting of the decision, even if unfavorable to one party, is removed. If decisions are retarded, not even the successful party to the hearing is satisfied. It is the speaker's hope that the regulation of telephone companies as now in existence in the state of Michigan will be continued and that every effort will be made to persuade future legislatures not to disturb but to perfect the law.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties —Prepared Under the General Supervision of Stanley R. Edwards—This Section on Economics of Telephony written by James H. Shoemaker

Quiz Questions on the Preceding Installment.

53. What idea is behind the suggestion that the various public utility commissions establish publicity bureaus?

54. What does advancement of progress demand of utilities? What must utilities do? What is given as the views of an economist as the final basis for comparing and determining the relative values of private and public ownership?

55. What reasons are given as to the necessity for standardization of common sense and goodwill? What does economic law require of the telephone industry?

CHAPTER III. Ownership and Operation (Cont'd.)

56. *Ownership and Operation Dependent Upon Orderliness.*—Ownership is entirely a matter of law. Of course, we are told that a man owns whatever he makes with his muscle or his mind; and the reason for this ownership is found in the fact that he owns the muscle and the mind which made the products. We are told these things as proof of the theory that the right of property is a natural right. The fact is pointed out that among those creatures in human form who have no written law, no governors, no courts and no police regulations, there are unmistakable evidences of the exercise of the power of this natural right. And among savages there are certain practices which come from this natural right to own what one catches while hunting, or produces or acquires in other ways. But it is much more satisfactory to exercise this natural right, if it be such, in those parts of the earth where it is "helped out" by the use of laws, courts, governors and police regulations.

Even those who cry out the loudest against ownership or the right of property as at present practiced, seem to show a very decided preference for remaining in the kind of society which has grown up side by side with this practice. The most vigorous opponents of the system of ownership which is now practiced, show no inclination either to go among those people who are free from our practices or to start any other plan in a new country.

During the last fifteen or twenty years it has been quite popular to turn the spotlight of condemnation upon the defects of anything that could be made to appear imperfect. We have even found spots on the sun. And we have been able to find spots, more or less objectionable, on almost everything that one might name. Fortunately, however, it is not possible to destroy the sun as a final or convincing evidence of one's disapproval of its spots. But in too many cases, public clamor has applauded those who have tried to destroy certain kinds of orderliness. The thought seems to have gained more or less currency that a "reformer" is one who opposes everything upon which he can find a spot or blemish. The idea seems to prevail more than it should, that destroying a thing which fails to prove its own perfection is more important than the preservation of orderliness.

The point which it is desired to show is that from day to day we pass farther and farther into the age when sympathy and improvement, rather than unsympathetic opposition, will be demanded of the agitator, the critic and the professed reformer or up-lifter. The kind of ownership will prevail, more and more, which increases rather than decreases orderliness. Orderliness will be most permanently advanced by those owners (public or private) who plan for, and accomplish, the satisfying of their patrons, not so much by tickling their vanity or otherwise pleasing their selfish interests, but rather by benefiting human progress, as a whole.

57. *Human Progress the Test of Orderliness.*—There are at least two general ideas concerning the orderliness which now prevails. One is that might, coupled with precedent, makes right, or at least makes order. In its most extreme form, this is the idea of the traditional man who, by killing off every citizen of a certain land, "made a desert and called it peace" or order. While with this idea, as with most other matters, there is need of much qualification, and perhaps considerable modification also, it must be admitted that it is a large part of the brand of orderliness which we have at this time.

The other general idea of orderliness is that human progress is the test of orderliness—that at least it should be. It is the idea that nothing is orderly if it stagnates. Nothing is truly orderly if it tends in the direction of ultimate discord or ill-will. It is the thought that "law and order" is a phrase which means very much more than the mere exercise of physical force, financial force, political force, intellectual force or ecclesiastical force.

Some seem to think these two ideas cross and conflict, but the author inclines to the opinion that they converge.

58. *Economic Relationship of Ownership and Operation to Orderliness and the Law.*—We must keep in mind "things as they are." We must remember that the various forces just named have been, and still are, the "bulwarks of the right of property"—the very foundation stones of ownership. We must not seek to destroy "things as they are," for we cannot get along without using them while striving onward and upward toward "the things which are to be." Therefore, while studying this matter of ownership and operation in their economic relationship to orderliness and the law; while considering orderliness as the foundation of human progress; and, while inquiring whether or not human progress is the test of orderliness, the following should be remembered:

First: (a). The tendency is toward an increasing public

interest in private property. (b). The United States is experimenting with the theory of *compelling private property to serve the common need.* (c). While no tendency, whatever, is discovered to do away with the right of property (or private ownership in general), this increasing public interest in private property is being unquestionably supported by "the drift of the decisions of the American courts."

Second: Human progress is the supreme public interest. Human progress is the center of the target toward which every human purpose and endeavor will be forced by economic law to converge more and more from month to month and from year to year. This seems to the author to be as incontrovertible as is the axiom that "the whole is greater than any of its parts."

Third: The advancement of the art of telephony, while fully as important as any man has ever imagined, cannot be as important, by any possibility of reasoning, as the testing of the part it plays from year to year, and the influence it exerts upon human progress. In support of this contention, the reader is referred to the following from a letter written recently by Theodore N. Vail to the 60,000 shareholders and other holders of the securities of the A. T. & T. Co.:

> The future of public service enterprises is something in which you have an indirect interest, as members of a great community (or nation); and, in which you have a direct interest as a holder of securities of this company.

After having awakened personal interest with this reference to their ownership of securities, with commendable deftness, he endeavors to lead them over to the larger view by appealing to each security holder's patriotism, in language as follows:

> In fact, this question of the future of public service enterprises is so important that, in my opinion, you should be more interested as a member of the community (as a citizen of state and nation). In my opinion the question is of such great civic or public importance that your interest in your investment should be secondary to your interest as a citizen.

Although the language has been extended slightly beyond the original wording, the original idea is not misquoted. Here the president of one of the large present-day undertakings, in a plain and matter of fact business communication, to the holders of the securities of his company, appeals to their sense of justice and patriotism as his chosen method of helping "to bring right ideas and a right understanding to bear upon the solution" of the existing "economic unsettlement."

In this instance, and in other similar instances, we have positive indications that an increasing number of men of unquestioned farsightedness and proven practicability, feel the need of "a process of standardization for human progress."

59. *The Process of Standardizing Ownership and Operation.*—An effort has been made to show that there are varying degrees of absoluteness of ownership. Attention has been directed to the fact that the owner of a farm has a larger degree of absoluteness in his authority over his property than is enjoyed or exercised by the owner of a light plant, a water plant, a transportation property or a telephone system. The trend toward increasing importance of operation as the absoluteness of ownership decreases, has been indicated. In other words, it seems as though the exercise of authority tends to depend more and more upon the use that is made of it—upon its operation—and, less and less upon the wording of the paper that is called a patent, deed, franchise or charter.

Other points brought out in previous discussion are that ownership and operation tend to become increasingly dependent upon orderliness, and that orderliness is becoming increasingly dependent upon good sense and goodwill. The test of orderliness and the test of ownership and operation is human progress. These fundamentals apply just as truly in the case of public ownership or of public operation as in the case of private ownership or private operation.

If either the method of ownership or the method of operation were to seriously hinder human progress, the result would be discord, disorder and the overthrow, finally, of the law upon which ownership and operation depend for their very existence. Hindrance of human progress, whether by public ownership or by private ownership, would overthrow orderliness. In so doing, it would overthrow both public ownership and private ownership, and both public operation and private operation. It could not turn out otherwise, because the "right of property" ends whenever orderliness ends. Therefore a process for the standardization of progress is the most important feature of this most vital of all economic problems —the future of public service enterprises. A process for the standardization of human progress is the greatest immediate economic need connected with this matter of the ownership and operation of telephone or other utility plants.

As the process of standardization for the art of telephony "does not represent a standing still but means unceasing effort, and continual improving and up-building," as it requires each year the expenditure of "large sums in the scientific, engineering, experimentation and development work," so, also, telephone economics demands that there shall be built up a similar "process of standardization" of the telephone's part in the scheme of human progress.

This may require the expenditure of large sums from day to day and from year to year, in scientific, psychological and truly sympathetic experimentation in the leadership of the work of bringing right ideas, a right understanding, and a proper sympathy to bear upon the solution of the existing economic unsettlement. At this time the author's purpose is merely to point out that this process of standardizing the telephone's relationship to human progress is a more practical economic need than is the mere betterment of the quantity, quality or cost of the service.

60. *Ownership Inseparable from Regulation.*—As a matter of expediency or convenience, the regulation of telephones by law will be considered in another chapter. Before closing this chapter, entitled "Ownership and Operation", let it be observed that a telephone plant must follow the regulations which effect the greatest good to the greatest number in order to be a *law-abiding* utility, just as truly as it must be in operation in order to be a utility at all. In other words, an idle telephone plant would be an outlaw rather than a utility. It would not be consistent to consider the ownership of a permanently idle plant except as junk; nor would it be profitable to consider the ownership of a plant operating in defiance of proper regulation, except in its true relationship, which

is that of an outlaw. Without regulation, orderly operation would be impossible; and without operation, ownership is non-existent so far as utilities are concerned.

(To be Continued)

U. S. Census Returns on Rural Telephones.

These is no clear line of demarcation between urban and rural telephone systems, says the United States Census report on telephones for 1912. The statistics for the systems which had their principal offices in places with a population of 4,000 or more were given for the United States censuses of 1902 and 1907 as representing the urban districts, all other systems and lines being classed as rural. This classification, however, was unsatisfactory, because many of the systems that had their principal offices in places of 4,000 inhabitants or more, extended their lines into the surrounding rural districts. By 1912 these extensions into the rural districts had become so great that it was believed the classification, if adopted, would be misleading. It was also found impracticable to obtain separate statistics for different cities from companies that operated in two or more places of 4,000 population or over.

At prior censuses the larger telephone companies reported separately the number of telephones on their rural lines. This was combined with the number reported by mutual systems and farmer or rural lines. The total was accepted as representing the rural telephones. The extension of the industry, however, was so rapid during the period from 1907 to 1912 that a classification of this character was practically impossible at the last census.

The only practicable segregation apparent was one based on the size of the companies or systems. Of the 32,261 telephone systems and lines, for which statistics are included in the present report, there were 30,317 that reported an annual income of less than $5,000, and no statistics other than the miles of wire and number of telephones were collected for them.

These statistics for the two classes of companies, (A) those with an annual income of $5,000 and over, and (B) those with an income of less than that amount, for 1907 and 1912, are given for each geographic division in the accompanying table.

Systems having an annual income of $5,000 or more, controlled larger proportions of both the miles of wire and the number of telephones in 1912 than in 1907, operating 93.9 per cent. of the wire and 83.9 per cent. of the telephones in 1912, as compared with 91.7 per cent. of the wire and 80.2 per cent. of the telephones in 1907. The same conditions existed in all geographic divisions with the exception of the East South Central, where the wire used by the smaller systems and lines increased from 7.5 per cent. to 8.3 per cent. of the total and the telephones from 18.9 per cent. to 22.5 per cent., and the South Atlantic and Mountain divisions, in which the proportions of telephones installed by the larger companies showed a slight decrease. The wire mileage of systems reporting an annual income of less than $5,000 formed only 6.1 per cent. of the total for all systems, and the telephones operated by them, 16.1 per cent. Therefore, while the operations of these small systems assume considerable proportions, they form a comparatively small part of the telephone business of the country.

The group of companies with incomes of less than $5,000 is composed largely of the small farmer and rural lines, and also includes the systems that are located in the smaller cities and towns. It represents the telephone business carried on independently of the large companies that operate principally in the important cities and their suburbs.

The number of systems of this class, together with the miles of wire and number of telephones, for 1912 and 1907, is given in the table.

The statistics in this table may be accepted as indicating in a general way the telephone operations in the smaller cities, towns, and rural districts insofar as that service is carried on independently of the larger commercial companies. In accepting the statistics in this table, it must be understood that in many instances, the companies with annual incomes of $5,000 or more, as well as those with incomes of less than that amount, operate in the same community.

As previously explained, a telephone system, which is counted as a unit for census purposes, may include a number of lines which are operated largely independently. Therefore the increase in the number of lines from 21,335 in 1907 to 30,317 in 1912, or 42.1 per cent., is no indication of the actual increase.

Division.	Census.	Total.		Miles of Wire.		Number of Telephones		Percentage of total. Miles of Wire		Number of Telephones	
		Miles of wire.	Number of telephones.	Class A: Income $5,000 or more.	Class B: Income less than $5,000.	Class A: Income $5,000 or more.	Class B: Income less than $5,000.	Class A.	Class B.	Class A.	Class B.
United States	1912	20,248,326	8,729,592	19,019,391	1,228,748	7,326,748	1,402,844	93.9	6.1	83.9	16.1
	1907	12,999,364	6,118,578	11,921,960	1,077,404	4,906,693	1,211,885	91.7	8.3	80.2	19.8
New England	1912	1,545,252	625,488	1,523,273	21,979	600,207	25,281	98.6	1.4	96.0	4.0
	1907	997,865	410,269	973,915	23,950	384,413	25,856	97.6	2.4	93.7	6.3
Middle Atlantic	1912	5,035,019	1,782,145	4,949,078	85,941	1,675,681	106,464	98.3	1.7	94.0	6.0
	1907	3,056,193	1,252,903	2,985,774	70,419	1,167,667	85,236	97.6	2.4	93.2	6.8
East North Central	1912	4,645,218	2,378,257	4,353,416	291,802	2,020,802	357,455	93.7	6.3	85.0	5.0
	1907	3,308,021	1,712,390	3,011,164	296,857	1,360,544	351,846	91.0	9.0	79.5	20.5
West North Central	1912	2,932,578	1,621,523	2,530,833	401,745	1,109,359	512,164	86.3	13.7	68.4	31.6
	1907	2,043,383	1,251,555	1,664,769	378,614	767,050	484,505	81.5	18.5	61.3	38.7
South Atlantic	1912	1,121,458	531,402	1,016,144	105,314	428,311	103,091	90.6	9.4	80.6	19.4
	1907	875,173	365,764	790,932	84,241	296,271	69,493	90.4	9.6	81.0	19.0
East South Central	1912	977,694	337,292	896,912	80,782	261,294	75,998	91.7	8.3	77.5	22.5
	1907	714,871	243,234	661,470	53,401	197,291	45,943	92.5	7.5	81.1	18.9
West South Central	1912	1,312,553	543,102	1,152,823	159,730	387,022	156,080	87.8	12.2	71.3	28.7
	1907	799,606	342,255	692,602	107,004	239,746	102,509	86.6	13.4	70.0	30.0
Mountain	1912	558,450	226,652	525,976	32,474	204,508	22,144	94.2	5.8	90.2	9.8
	1907	364,605	154,061	342,413	22,192	141,339	12,722	93.9	6.1	91.7	8.3
Pacific	1912	2,120,104	683,731	2,070,936	49,168	639,564	44,167	97.7	2.3	93.5	6.5
	1907	839,647	386,147	798,921	40,726	352,372	33,775	95.1	4.9	91.3	8.7

Miles of Wire and Number of Telephones, by Classes of Companies, 1912 and 1907—All Systems and Lines.

During the five years the wire mileage of the small companies increased by 151,531, or 14.1 per cent., and the number of telephones by 190,950, or 15.8 per cent. The greatest percentage of increase in miles of wire was reported for the East South Central division, and in telephones for the Mountain division, while for New England and actual decrease was shown, in both particulars. Decreases appear for the miles of wire in 14 states, and for the number of telephones in 13 states. The only divisions in which all the states reported increases are the West South Central and the Pacific.

The Romance of the Wires.

Chance and the telephone wires combined to bring together two long-separated comrades when a citizen of Nyack, N. Y., had occasion to call up a business firm in New York City some time ago. According to an interesting account of the incident in the Nyack Evening Star, two "boys in blue" had fought side by side in the Civil War, had helped repel Pickett's charge at Gettysburg, and had been through the fierce conflict of Cold Harbor. With the end of the war, they had been separated and had lost all track of each other.

When Mr. Wallace, a resident of Nyack, called up a New York house on business, the name of the man who answered and the tone of his voice, completed a circuit of memory in Mr. Wallace's brain. The man at the other end of the line was soon identified as his companion of many battlefields, and by this queer turn of Fortune's wheel, the two were reunited after years of separation.

Relation of Stock Ticker to Interstate Commerce

Interstate Commerce Principle Involved in Petition of Boston Broker Before the Massachusetts Commission for an Order Requiring the United Telegram Co., or the Gold & Stock Telegraph Co. to Furnish Him with Stock Ticker Service

An important controversy bearing upon the relation of stock ticker service to interstate commerce is at present under consideration by the Massachusetts Public Service Commission. A petition was filed with the board recently by Calvin Foster, of Boston, requesting that the commission order the United Telegram Co. or the Gold & Stock Telegraph Co. to furnish him with stock ticker service, for use in his brokerage business. A hearing was given by the board on April 21 and briefs were filed on May 5.

Points in Petitioner's Brief.

P. H. Kelly, of Boston, counsel for the petitioner, stated that it is admitted that the defendant companies both receive the quotations made in the New York Consolidated Stock Exchange on the floor of the exchange, the delivery of the quotations by the exchange to the telegraph companies occurring in this building; that upon the delivery of the quotations, the exchange has no further interest or duty over the transmission or over the property right in them, other than a mere limitation that the telegraph companies will not send such quotations to any person not previously assented to by the exchange; and that the telegraph companies transmit the quotations by their own operators and equipment to Boston immediately after reception.

An operator in the Boston office of the telegraph company communicates the quotations verbally or in writing to another operator stationed at a keyboard connected with all the tickers in service in the company's Boston district, but having no physical connection with the New York-Boston circuits. It is also admitted that the telegraph companies furnish the ticker service under contracts made directly between the subscribers and the telegraph companies in Boston and that the exchange has no interest in the money paid by such subscribers for such stock ticker service.

The petitioner contends that to compel the telegraph companies to furnish stock ticker service to the petitioner is within the jurisdiction of the commission, because it is not interstate commerce; and that even if it were interstate commerce, it would not be an interference with the latter to compel the companies to furnish service to the petitioner upon an equality with all other persons. It is contended that in the furnishing of Gold & Stock Ticker service to its Boston subscribers, the Western Union Telegraph Co. is not acting in the capacity of common carrier, and that it appears that the Western Union company sells commercial news to its Boston subscribers on the tickers, the transaction being confined to Boston both electrically and financially. The only interstate commerce involved is the communication between the agents of the telegraph company in New York and Boston. The interstate character of the transaction ceases when the Morse operator in Boston receives the message in the form and condition in which it originally started on its interstate journey. The sending out of the quotations, thereafter transcribed into English and numerals to the Boston ticker subscribers by means of a second operator, thereby becomes a purely intrastate transaction.

Even assuming for the purposes of argument that the telegraph companies' contention as to the interstate character of the gold and stock ticker service is correct, that fact does not prevent the state from regulating that part of the transaction which is wholly intrastate. Wherever a separation in fact exists between transportation service wholly within the state and that between the states, a like separation may be recognized between the control of the state and that of the nation. State legislation may affect interstate commerce and be entirely valid because not being a direct interference. (New York vs. Knight, 192 U. S. 20; Covington Bridge Co. vs. Kentucky, 154 U. S. 209; Hopkins vs. U. S., 171 U. S. 578).

A state may regulate the form of contracts issued by common carriers in accordance with common law principles and decisions, and a statute providing for the recovery of a penalty for the failure of a telegraph company with a line of wires wholly or partly within the state to diligently transmit and deliver messages is a valid exercise of the police power of the state in relation to messages from points outside and directed to points within the state. State statutes prohibiting discrimination and regulating the rental allowed for the use of telephones are valid as to a telephone company engaged in interstate business as they simply provide that the telephone companies shall furnish persons within the state with certain services for a certain compensation.

The petitioner's brief closes with the contention that according to the contract between the telegraph company and the exchange, applicants for ticker service can be disapproved only when such quotations are being used unlawfully or when intent of unlawful use is shown. No such evidence has been introduced relative to the petitioner, who therefore asks the board to compel the Western Union company to furnish the service requested on equal terms with others.

POINTS IN RESPONDENT'S BRIEF.

Arthur Lord, of Boston, counsel for the Western Union company, filed a brief contending that the transmission of quotations from the New York Exchange to brokers' offices at Boston, no matter by what means, is interstate commerce, and that the Massachusetts commission therefore has no jurisdiction in the case. He urged that the point of origin being in one state and the destination in another, lifts the matter from the intrastate field. Recently an application substantially similar to the Foster complaint was presented to the Public Service Commission of New Jersey. That commission declined jurisdiction solely upon the ground that the business done was interstate in character and therefore exclusively under the jurisdiction of the Interstate Commerce Commission. Mr. Lord contended that the Western Union company has no right, under its contract with the New York Exchange, to supply ticker service to parties not approved by the latter.

In Kinsley Company vs. Board of Trade of Chicago, 198 U. S., 236, the court held that the Board of Trade is entitled to have its quotations protected by the law and to keep the work which is done to itself. Nor does it lose its property rights in the quotations by communicating them to certain persons, even though many, in confidential and contractural relations with itself. Contracts under which the Board of Trade furnishes telegraph companies with its quotations, which it could refrain from communicating at all, on condition that they will only be distributed to persons in contractural relation with and approved by the board and not to what are known as bucket shops, are not void and against public policy as being in restraint of trade, either at common law or under the Sherman anti-trust act. In the matter of Renville, 46 Appellate Div. 37, New York, the court held that the telegraph companies could not be required to furnish quotations to customers against the approval of the New York Consolidated Stock Exchange.

Mr. Lord held that the complaint of the petitioner, in the last analysis, is against the exchange only, which has the right to withhold its approval of granting the petitioner service. In conclusion, it is held that for the Western Union company to give the information to the complainant would be in violation of its contractural obligations and of the statutes of New York and Massachusetts prohibiting the divulging to anyone but the persons for whom it was intended of the contents or the nature of a telegraphic dispatch.

Loud-Speaking Telephone in Window Demonstrations.

The loud-speaking telephone used by B. H. Hogan, of Chicago, in his window demonstration of a patented tie retainer in Louisville, Ky., has attracted considerable attention. Instead of going through many exaggerated motions in demonstrating the retainer and using cards with texts on them to get his message to the people who stop to observe him, Mr. Hogan talks into a specially devised mouthpiece attached to his shoulders and the vibration is conducted to two horns which are directed downward from the top of the show window toward those who are standing on the sidewalk below. The sound of the voice is sufficient to attract the attention of all passers-by, who interest themselves in discovering its source and then watch to see what the demonstrator has for them. Mr. Hogan has been making use of the device for about a year and has been meeting with marked success.

He uses a double instrument, talking into a transmitter on the two-wire system plan and the vibrations are taken off over a three-wire system, on which the intensified voice is carried to the metal horns. The volume of sound is sufficient for the groups in front of the windows to hear readily, over the roar of street traffic, what the demonstrator is saying. Mr. Hogan carries his own board and other equipment with him and makes installations wherever he goes.

New Exchange to be Erected at Beaumont, Texas.

J. E. Farnsworth, of Dallas, vice president of the Southwestern Telegraph & Telephone Co., has announced that a new telephone exchange and general office building will be erected on Bonham and Main streets, Beaumont, Texas, as a cost of about $50,000. The inside equipment will cost $100,000 and the switchboard will have a capacity for handling 5,000 lines. Outside equipment, such as underground and overhead cables, wiring and poles will be built at a cost of $50,000.

The building will be three stories in height and will be fireproof and equipped with every modern convenience.

The site for the new building was purchased by the company several months ago for about $20,000.

Physical Connection Ordered at Mound City, S. D.

The South Dakota Railroad Commission, on application of the Missouri Valley Telephone Co., of Mound City, has issued an order requiring the Dakota Central Telephone Co. to connect its toll lines, at Mound City, with the lines of the Missouri Valley company.

The application for connection with Pollock, Herried and Mobridge, was denied for the reason that such service would give all the local subscribers of the Missouri Valley company full use of the Dakota Central lines and through that prestige would finally secure a monopoly of all business of the Dakota Central company.

Right of a City to Vote Bonds for Municipal System.

The right of the city of Mitchell, S. D., to vote bonds for the construction of a municipal telephone system has been sustained by the supreme court, in an opinion by Judge Smith, affirming the opinion of the lower court in the case of T. J. Spangler vs. City of Mitchell. The city voted the bonds by a heavy majority, and Spangler brought suit as a taxpayer to prevent the issuance of the bonds for construction work, in which he lost his case in the lower court, and has lost again on appeal.

Communication Between Los Angeles and New York.

Telephone connection between New York and Los Angeles was successfully established last week, by way of the transcontinental line from New York to San Francisco, and then by a line of the Pacific Telephone & Telegraph Co. from San Francisco to Los Angeles.

The line distance to San Francisco is 3,400 miles, and from there to Los Angeles 475 miles, a total distance of 3,875 miles. The line is now open for commercial service.

Bulletin Issued by the Missouri Telephone Association.

The Missouri Telephone Association has made a new departure in the way of issuing bulletins containing information of interest and value to its members. The bulletin issued on May 4 contains a summary of the activities of the public service commission, including decisions rendered and cases on file; also a notice of a telephone exchange for sale, farms which may be traded for telephone property and used equipment for sale.

Automatic Telephone Co., of Key West, Granted Charter.

The Automatic Telephone Co., of Key West, Fla., which was organized a short time ago to construct and operate an automatic telephone system in that city, has just received its charter from Tallahassee, Fla. On May 17 the company will hold a meeting for the election of permanent officers for the ensuing year.

Queries on Theory and Practice

Energy Expended and Magnetic Pull.

In the following, neglect internal resistance of battery, resistance of wires, loss of efficiency from various causes, also any horseshoe magnet effect in regard to magnetizing force. The use of this latter term refers to the pull exerted on an armature before the pole of each coil, which will be called *M*. As *M* is proportional to amperes times turns, it will in this case be proportional to amperes, as turns are assumed to be the same in each coil.

Comparing the sketch, Fig. 1-*C* with that of Fig. 1-*A*, the voltage is the same but the resistance is halved. Result: Current is doubled, wattage is doubled, and *M* per coil is doubled, but as Fig. *A* has two coils, the total *M* is the same in both Figs. *A* and *C*. Thus, current and wattage are each doubled with no increase in total *M* or pull on armature.

Comparing sketch Fig. 1-*C* with sketch Fig. 1-*B*, the resistance is the same but the voltage is doubled. Result: Current is doubled, wattage is increased four times and *M* is doubled. Thus current and *M* are each doubled only while the total number of watts is four times as much.

There is surely some error in these comparisons as *M*, or available power rendered, should be proportional to the electrical energy expended in watts, i. e., neglecting the losses, etc., which would change the net result by a small margin.

Another little problem of a slightly different kind: Comparing Fig. 1-*A* and Fig. 1-*D*, will the efficiency be the same in each case? That is, will the batteries (dry) last just half as long with connections as in Fig. 1-*D* as in Fig. 1-*A*, neglecting any over or under-working of the cells, for instance, an electric clock in which the coils are four ohms each or 80 ohms in series? In this the contact is made only for a very small fraction of a second and about 10 times per hour. Do you think this use would either over or under-work dry cells with either arrangement Figs. 1-*A* or 1-*D*? It takes four cells with the first connected.

Neglecting the internal resistance of the battery, resistance of the wires, loss of efficiency from all causes and any increase in efficiency due to the use of the horseshoe arrangement of the magnet core, the conditions shown in Fig. 1 may be analyzed as follows:

Fig. 1-*A*. Two volts with a total resistance of two ohms give a current of one ampere. The voltage drop in each coil is one volt, as the coils are connected in series. The number of watts (electrical power) expended in *each* coil is as follows:

Fig. *A*. One watt per coil (one ampere times one volt).

Fig. *B*. One watt per coil (one ampere times one volt).

Fig. *C*. Four watts per coil (two amperes times two volts).

Fig. *D*. One watt per coil (one ampere times one volt).

In comparing each coil in Fig. 1-*A* with the coil of Fig. 1-*C*, it must be noted that the watts expended in each coil is determined by the current flowing and the drop in volts around the coil. This is not the same as the battery voltage. In Fig. *A* the voltage drop in each coil is one volt. This gives a wattage per coil of one.

These two sketches, Figs. *A* and *C*, illustrate very clearly that if the total number of turns in any magnetizing helix is reduced, it is necessary to increase the amperes flowing, proportionately, in order to obtain the same magnetizing force.

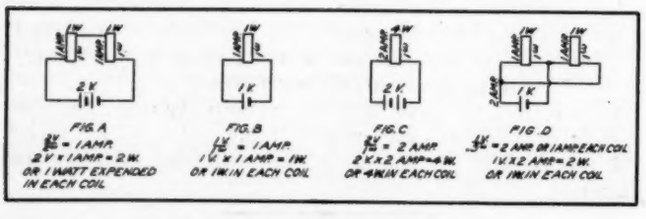

1W
1/2 AMP
2 V
FIG. A
1/2 = 1 AMP.
2 V x 1 AMP = 2 W.
OR 1 WATT EXPENDED IN EACH COIL
1 V
FIG. B
1/2 = 1 AMP.
1 V. x 1 AMP = 1 W.
OR 1 W IN EACH COIL
4W
1 AMP
FIG. C
1/2 = 2 AMP.
2 V x 2 AMP = 4 W.
OR 4 W IN EACH COIL
FIG. D
1/2 = 2 AMP OR 1 AMP EACH COIL
1 V x 2 AMP = 2 W.
OR 1 W IN EACH COIL

Fig. 1. Circuit Arrangements.

If the two coils in Fig. *A* are properly designed to produce the correct magnetizing force with a battery of two volts, it is certain that one exactly similar coil, as in Fig. *C*, would not be suitable for the same duty. The extra consumption of watts would probably be expended in heating the coil, battery, etc.

It is not correct to assume that the magnetizing force in any coil is proportional to the watts expended in the coil. It is necessary to take into consideration the resistance of the coil as well as the *number of turns*, which is only another way of saying that for similar coils the magnetizing force is proportional to the amperes flowing. If it is desirable to make use of the wattage, it may be readily seen that the magnetizing force is proportional to the number of turns in the coil multiplied by the square root of the number obtained when the watts are divided by the resistance. This quantity is equal to the amperes.

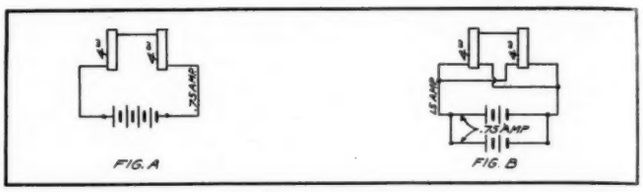


Fig. 2. Circuits for Electric Clock.

In the sketches, the magnetizing force of the various combinations is as follows, neglecting magnetic circuit conditions entirely:

Fig. *A*. Twice the number of turns *per coil* times one ampere.

Fig. *B*. Number of turns *per coil* times one ampere.

Fig. *C*. Number of turns *per coil* times two amperes.

Fig. *D*. The number of turns *per coil* times one ampere multiplied by two.

In the arrangement shown in Fig. 1-*D*, if only one set of two dry cells are used in series and the resistance of the coils is four ohms each, each contact of the clock will draw a discharge of 1½ amperes from the battery. By using four cells in series and arranged as in Fig. 1-*A*, and Fig. 2-*A*, each contact of the clock, under the same conditions as to coil resistances, will draw a discharge of ¾ths ampere from the battery. Theoretically, in the arrangement of Fig. 1-*D*, four cells should be connected in series-parallel, Fig. 2-*B*. This will call for a discharge of ¾ths of an ampere *per cell* for each contact of the clock. Practically, however, the cells in such an arrangement would not in all probability be discharged uniformly. Therefore, it is likely that the arrangement in Fig. 1-*A* is the better and will show the longer life for the average cell.

New Exchange in Operation at Waterbury, Conn.

The Southern New England Telephone Co. recently celebrated the opening of its new exchange at Waterbury, Conn., giving the public an opportunity to inspect the new building. It was estimated that approximately 1,500 people took advantage of the opportunity tendered them. Ralph E. Gerth, exchange manager of the Waterbury district, and E. A. Smith, district manager of the Waterbury and Hartford district, assisted by the employes of the plant, commercial and traffic departments, conducted the visitors through the building, extolling the beauties and explaining the intricacies of the new plant.

On the first floor are located the general offices of the company, together with the office of the district plant chief. The terminal and storage battery rooms are located on the second floor, while the third floor is devoted to the operating room, a restaurant for the employes and a rest room for the operators. The fourth floor is to be used as a school room and demonstrating boards are to be installed.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Damages Awarded for Injury to Hearing.

Following a deliberation of nearly 15 hours on May 6, the jury in the case of William A. Voigt against the Citizens Telephone Exchange, of Sheboygan, Wis., brought in a sealed verdict, awarding damages to the extent of $2,500 to the plaintiff for injury to his hearing by the ringing of the telephone while he had the receiver to his ear.

The case was hard fought with Attorney Charles Voigt representing the plaintiff and Burr, Scott & Lawrence, with E. R. Bowler of counsel representing the defendant. Expert testimony was given on both sides in the course of the trial with a large amount of scientific data as evidence.

A special verdict was given in the case. It is as follows:

First Question: On November 18, 1913, when the plaintiff was using the telephone at his residence for the purpose of talking over the defendant's line to the person for whom the plaintiff had called, and while the plaintiff was then holding the receiver up to his right ear for that purpose, did the operator then cause or allow a dangerous current of electricity to pass through the wire and telephone of the defendant then being used by plaintiff?

Answer: Yes.

Second Question: If your answer to the first question be "Yes," then answer this—

Did the electric current mentioned in the first question produce such a vibration and pressure into and through the receiver and into the plaintiff's right ear as to cause a partial loss of the sense of hearing therein?

Answer: Yes.

Third Question: If your answer to the first question be "Yes," then answer this—

Did said electric current produce such a vibration and pressure into and through the receiver and into the plaintiff's right ear as to cause plaintiff to experience the sensation of hearing a constant buzzing or rattling sound in that ear since November 18, 1913?

Answer: Yes.

Fourth Question: If you answer "Yes," to the second and third questions, or to either of them, and if you also answer "Yes" to the first question, then answer this—

Was it negligence which amounted to a want of ordinary care on the part of the said operator to cause or allow said electric current to pass on the wire and to the receiver while the plaintiff was holding it to his ear, as stated in the first question?

Answer: Yes.

Fifth Question: If you answer "Yes" to the second and fourth questions, then answer this—

Was the aforesaid negligence of the said operator the proximate cause of the injury to the plaintiff's sense of hearing which your answer to the second question finds that he has sustained?

Answer: Yes.

Sixth Question: If you answer "Yes" to the third and fourth questions, then answer this—

Was the aforesaid negligence of said operator the proximate cause of the injury to the plaintiff's sense of hearing which your answer to the third question finds that he has sustained?

Answer: Yes.

Seventh Question: If you answer "Yes" to the second and third questions or to either of them, then answer this—

Was there any want of ordinary care on plaintiff's part which contributed to cause injury alleged in his complaint?

Answer: No.

Eighth Question: If the court shall be of the opinion that plaintiff is entitled to judgment in his favor, at what sum do you assess his damages?

Answer: Two thousand five hundred dollars ($2,500).

In the opening statement, Attorney Charles Voigt stated that on November 18, 1913, William A. Voigt, the plaintiff, asked central to call a party on the same party line on which he was a patron and received service. The call requested was four rings. The plaintiff heard the four rings given, and took down the receiver and placed it to his ear. He alleges the central operator then rang loudly in his ear, which carelessness on the part of the operator gave him a violent shock. He complains that the sense of hearing in that ear was permanently injured, and that he continually suffers great annoyance and pain from a buzzing and rattling sound in his ear. He also contends that the injury has greatly interfered with his pursuit of his daily vocation, that of an insurance and real estate agent.

Protest Against Rate Increase in Southern Michigan.

Following a hearing in which subscribers of the Southern Michigan Telephone Co. of Burr Oak, Mich., protested an increase of rates asked for by the company, the Michigan Railroad Commission decided to go to the books of the company in an effort to determine whether the proposed increase is justified.

As reported previously in TELEPHONY the Southern Michigan Telephone Co., operating in St. Joseph, Branch and Calhoun counties, Michigan, recently was allowed to effect an arrangement by which it took over certain lines of the Michigan State Telephone Co. in these counties. This merger has been attacked by the Michigan Independent Telephone & Traffic Association in the circuit court at Grand Rapids, Mich.

Following the merger, which gave the Michigan State company certain lines of the Southern Michigan company, an increase in rates was proposed by the Southern Michigan company, and the railroad commission was sought for authority to make this increase.

A hearing was held recently at Lansing, patrons of the company appearing and charging that the increase in some cases would amount to nearly 50 per cent. Representatives of the company, while declaring the raise would not be so great as this, contended that a raise in rates is necessary to allow a fair return on the money invested, the amount invested being given as nearly $1,000,000.

As the patrons could give no definite figures the commission decided to send men into the field to investigate and report, after which a decision will be made in the matter.

Company Required to Install Telephone for Applicant.

On the application of William Mann, a prominent farmer of Blandford township, Oxford county, the Ontario Railway & Municipal Board has given notice to the Innerkip Rural Telephone Co. to install the telephone service for which the applicant states he has made constant but vain demands for two years past. President Hossack and Secretary Hudson, of the telephone company, demurred to the

request, on the grounds that the applicant's house was too far from the nearest telephone-using neighbor to warrant the installation.

Vice-Chairman Ingram, of the board, told the company it would have ten days in which to reach an equitable arrangement with Mann, by which he shall be provided with telephone service. If the company fails to do this, the board will then issue an order requiring the installation of the demanded telephone. Mr. Ingram added the comment evoked by a remark of Mr. Hudson, that if the company could show that its present yearly rate was too low to be profitable, the board would authorize it to increase its rate.

Rate Increase Authorized at Prairie du Chien, Wis.

The Wisconsin Railroad Commission recently handed down its decision in the application of the Union Telephone Co., of Prairie du Chien, Wis., for permission to increase its rates, ordering that the following schedule be substituted for its present monthly rates:

	Gross	Net
One-party business	$2.25	$2.00
Two-party business	2.00	1.75
One-party residence	1.75	1.50
Two-party residence	1.50	1.25
Four-party residence	1.25	1.00

The net rates shall apply when payment is made on or before the 15th of each month, following the month for which service was rendered. Bills for service shall be payable at the office of the company and the gross rate shall apply when payments are not made by the 15th of the month following the month for which service was given.

The rates as authorized in the commission ruling, may be made effective for service rendered after May 1.

Injunction Enioining Power Company, Denied.

Holding that the Lincoln Telephone & Telegraph Co. could not maintain a suit under the new law requiring a sufficient clearance between electric and telephone wires to prevent interference with service, Judge E. E. Good in the district court at York, Neb., refused an injunction asked for by that corporation against the Aurora Electric Light & Power Co. to stop the construction of a power transmission line between Aurora and Hampton.

Judge Good held that the only lawful ground for an injunction would be a showing that the public was damaged by the construction of the Aurora company's pole line, and this question, he said, could not be raised by the rival corporation. One party to a controversy, he said, could not go into court seeking relief in the name of the public, against the other party.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

May 18: Hearing in regard to complaints against the Pacific Telephone & Telegraph Co., at Sacramento, Cal.

ILLINOIS.

May 6: The following companies were ordered to change their rates so as to eliminate discrimination: St. James (Ill.) Telephone Co.; Berwick (Ill.) Switchboard Co.; McClintock Mutual Telephone Co., Carthage; Cropsey (Ill.) Telephone Co.; Calhoun (Ill.) Farmers' Co-operative Telephone Co.; Citizens Mutual Telephone Co., Cambridge.

May 6: Rock River Telephone Co., of Rochelle, Ill., ordered to remove one mile of its line which extended into the territory of the Byron (Ill.) Telephone Co. and duplicated the telephone systems. The question of the necessity of a certificate from the utilities commission was not involved, but the commission held that the Rock River company had no right to duplicate service.

May 6: H. G. Noble, et al., enjoined from establishing a telephone exchange near Perry, Ill., on petition of the Pike County Telephone Co., of Perry.

May 6: Joint pole agreement between the Galesburg (Ill.) Union Telephone Co. and the receivers of the Central Union Telephone Co. approved.

May 6: Joint pole agreement between the receivers of the Central Union Telephone Co. and the Altona (Ill.) Telephone Co., approved.

May 6: Sale of telephone property by the Woodstock (Ill.) Mutual Telephone Co. to the Grange Telephone Co., approved.

May 6: Agreement between the receivers of the Central Union Telephone Co. and the Boone County Rural Telephone Co. to operate their lines in connection with each other, approved.

May 11: Hearing in Chicago on the petition of Winslow, care of South Wayne Telephone Co., for authority to change telephone rates at Winslow, South Wayne, Wiota, Gratiot and other points.

May 11: Hearing in Chicago on petition of the Farmers' Mutual Telephone Co., of Altona, for authority to change rates to stockholders and non-stockholders at Altona.

KENTUCKY.

May: Complaint filed by the Flemingsburg (Ky.) Telephone Co., alleging that the Maysville Telephone Co. and the Central Union Telephone Co. are refusing to furnish it with connections for Cincinnati, Ironton, Ripley and Portsmouth, Ohio.

MISSOURI.

April 23: Grand River Telephone Co. authorized to purchase from the Farmers Telephone Co., of Harrison county, Mo., the exchange at Mt. Moriah, and to consolidate it with the exchange now owned by the Grand River company. Case 666.

April 23: James T. Harmon granted a certificate of convenience and necessity to construct and operate a telephone exchange at Licking, Mo. Case 664.

OKLAHOMA.

May 17: Postponed hearing on numerous complaints of Independent telephone companies of Oklahoma against the Pioneer Telephone & Telegraph Co., alleging inequitable distribution of long distance revenues.

NEW YORK.

May 12: Hearing in the matter of the inquiry instituted by the commission as to pay stations of the New York Telephone Co. at North Collins.

May 12: Hearing in the matter of the inquiry instituted by the commission as to the Federal Telephone & Telegraph Co., of Buffalo, N. Y., rendering certain service without charge, and as to certain pay stations.

PENNSYLVANIA.

May 7: Hearing on the complaint of the Blairsville (Pa.) Telephone Co. against the Johnstown (Pa.) Telephone Co. and the Windber (Pa.) Telephone Co., for the establishment of through service. The Blairsville company has connections with the Johnstown company and Johnstown has connections with the Windber line. The Blairsville company desires to connect with Windber, and while the Johnstown company accepts the proposition, the Windber company opposes it.

SOUTH DAKOTA.

April 30: Order authorizing the Social Telephone Co., of Marshall county, to charge the same rate to all subscribers without discrimination to stockholders and requiring the company to file agreements and point rates with connecting companies.

May 3: Dakota Central Telephone Co. ordered to connect with the lines of the Missouri Valley Telephone Co., of Mound City, over the toll switchboard of the Dakota Central company at Mound City, S. D. The application for connection at Pollock, Herried and Mobridge has been denied, for the reason that such connection would give all subscribers of the Missouri Valley company full use of the Dakota Central lines and through that prestige would finally secure a monopoly of all business of the Dakota Central company in that territory.

WASHINGTON.

May 15: Hearing on the valuation of the properties of the Pacific Telephone & Telegraph Co. in the state of Washington. On the valuation to be fixed, as a result of this hearing, telephone rates, both for exchange and toll service, will be based.

WISCONSIN.

April 9: Order authorizing the Union Telephone Co., of Prairie du Chien, Wis., to increase its rates.

May 12: Hearing in regard to application of the Pigeon Valley Farmers Telephone Co., of Pigeon Falls, Wis., for authority to increase rates, tolls and charges. U.—782.

May 13: Hearing in the case of Peter B. Bogart, et al., vs. the Wisconsin Telephone Co., as to rates. U.—341.

May 14: Hearing in regard to application of the Ettrick (Wis.) Telephone Co. for authority to increase rates. U.—787.

May 19: Hearing in regard to application of the Lebanon (Wis.) Telephone Co. for authority to increase rates, tolls and charges. U.—786.

May 27: Hearing in regard to application of the Random Lake (Wis.) Telephone Co. for authority to increase rates, tolls and charges. U.—789.

Practical Subjects—Letters and Discussions

Systematic Scheme for Supplies in Motor Truck.

Some who read this article, which appeared in a recent issue of the Bell Telephone News, may probably have to confess that they are perfectly familiar with the loop wagon or auto, where material, tools and subscriber sets are strewn over the bed of the truck; and conditions have become so bad that every trip to the wagon for material requires a diligent search.

Each search means time lost and more trouble on the next trip until it becomes necessary to have a "house cleaning," requiring the reloading of the truck. This rearrangement only lasts a few days, however, when conditions become as bad as ever.

To overcome these difficulties A. T. Spangler, of the Cleveland Telephone Co.'s plant department, has designed and had constructed a special body for loop automobiles, this body being divided into compartments so that there is "a place for everything and everything in its place."

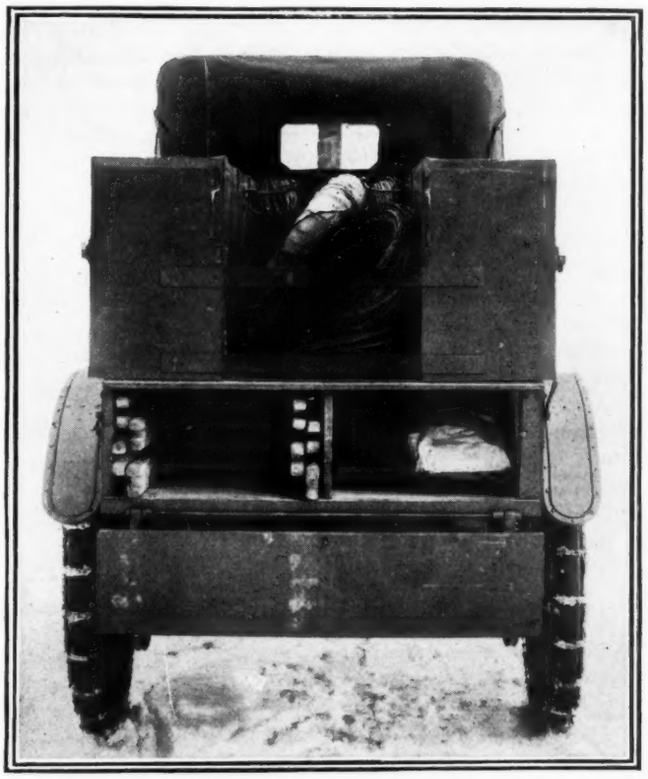
To provide a proper sized compartment for each article and to have all material easy of access, was no small task, as the load carried by a loop automobile ranges from a screw to an extension ladder.

The problem was simplified by designing the compartments to hold a specified amount of material, approximately one day's supply, and each night the stock that has been used is replenished, the amount of material used or recovered being taken into consideration. This system of stocking up at night enables all loop autmobiles to start out promptly each morning.

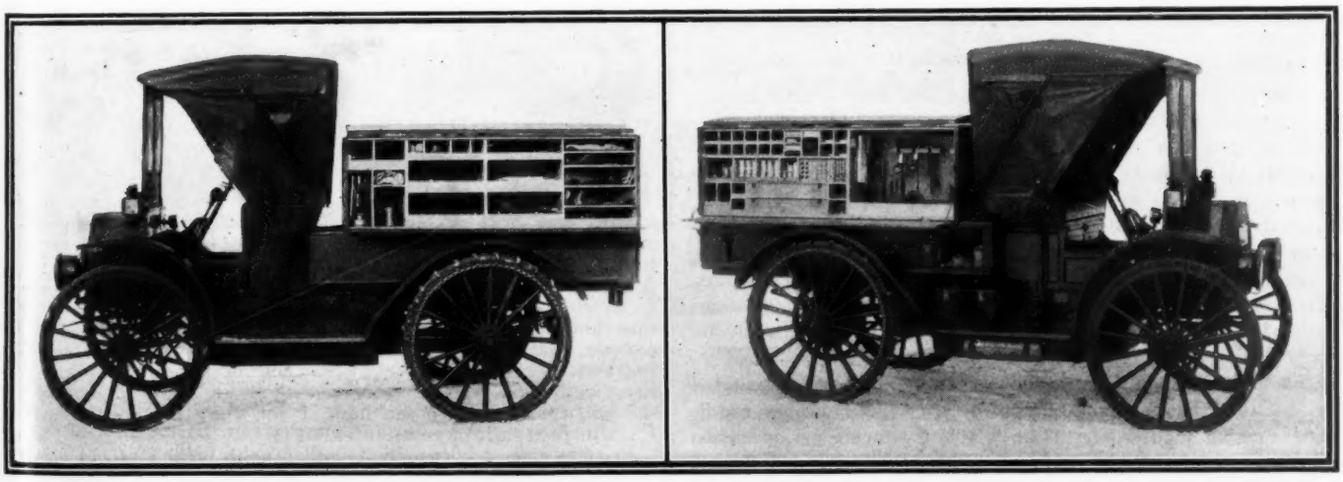
The body of the International truck shown in the accompanying illustrations, is made up of three wooden boxes, the base being a box 6 ft. 11 ins. long, 3 ft. 10 ins. wide and 13 ins. high. Resting on this base are two parallel boxes, each 6 ft. 3 ins. long, 14 ins. wide and 23 ins. high. The space between these two parallel boxes has been utilized by attaching hooks to the inner sides of the boxes, and hand lines, coils of wire, blocks and tackle, etc., are hung on these hooks.

The box forming the base has a partition running through the center longitudinally, the left hand side when facing the rear of the truck, or in other words, the street side section forming a compartment large enough to hold a four-section ladder, and the right hand, or sidewalk section providing a storage place for telephone instruments, as shown in one of the illustrations. These telephone sets are made accessible from the sidewalk side of the truck by a sliding door, and to protect them from the weather, the top of this lower box is covered with galvanized sheet iron.

The idea of placing the tools and material that are used most frequently on the sidewalk side of the truck, has been followed to such an extent that the material required on 90 per cent. of the work orders can be obtained by the linemen without walking around to the opposite side of the automobile. This has been accomplished by means of bins, drawers and slides in the upper box. For instance, one side is equipped with bolt fixtures to hold different sized knobs. Another slide is equipped with cross arm pins, on which can be screwed glass insulators. The drawers are partitioned off to accommodate such small articles as nails, screws, toggle bolts, etc.



Rear View of Truck Showing the Ladder Compartment.



View of International Truck Showing the Different Sized Compartments Devised for Various Supplies Used in Repair Work.

For storing tubes, a block is provided bored with the proper size holes, each hole being marked to indicate the size of tube it contains. Another feature that adds to the efficiency of

this automobile body is the fact that all parts that must be assembled to make up one piece of apparatus are all grouped together in adjacent compartments. As the foreman must take his office with him, a compartment is provided for reports and specifications.

On the street side, separate compartments are provided in the upper box for rubber coats, rubber boots, lunch boxes, spurs, belt tools, paints and a box containing such medical supplies as are required for first aid to the injured.

The arrangement of this automobile body enables an inventory to be taken with the greatest of ease. It enables the foreman to tell at a glance when leaving a job, whether every tool has been returned to its proper place. It enables the linemen to secure necessary material and equipment without delay and a 50 per cent. increase in the working efficiency of the loop installers of the Cleveland Telephone Co. has resulted.

Simple Method of Testing Pole Changer Cells.

For testing the ringing battery on a pole changer I purchased a 40-ohm buzzer and connected about four feet of regular No. 22 S. & S. inside wire to it, fixing the other ends of the wires with a pair of tips from the ends of an old receiver cord. Then I took an old dry cell that tested only two amperes and connected the buzzer to it. The adjusting screws were then tightened until the battery would just start a low buzz. When going over the battery, the sound of the buzzer will tell how each cell is standing. One hundred cells can be tested in two minutes if in a handy place.

Forest, Ont., Canada. Stanley Ellerker.

How the Federal Company, of Buffalo, Clears Trouble.

One of the most important problems that a large telephone company has to solve, according to R. G. Logan, of the Federal Telephone & Telegraph Co., of Buffalo, N. Y., is that of furnishing telephone service to its subscribers with as few interruptions as possible. There is nothing so annoying to subscribers as to find the line out of order when they attempt to use it.

The majority of these cases, especially in an automatic plant, are cleared outside the central office, and may be caused by three things:

First. Forces over which we have no control, such as lightning, sleet storms, etc.

Second. The natural wear and tear of the lines and equipment.

Third. Faulty workmanship.

The first, of course, does not happen very often, and is being reduced to a minimum by modern methods of protection and construction. The second occurs on all mechanical apparatus, but can be reduced, if not entirely eliminated, by proper inspection and reconstruction, if undertaken in time. The third depends almost entirely upon the efficiency of the troublemen.

In our Buffalo plant we have divided the city into districts, the size and boundaries of which are determined by the number of subscribers, length of lines, car routes and cable distribution, etc.

Each troubleman is assigned a district, and he is expected to see that the lines and equipment are kept in proper condition, making such repairs as he is able to, during periods when he has no reported trouble, and reporting such conditions, which he is unable to clear permanently, on a "Special Troubleman's Report."

These reports are forwarded to the plant department for its attention, and after they have been taken care of, are returned to the troubleman for his inspection.

In the meetings that are held with the troublemen, we invite suggestions, and a great many good points have been brought out that have helped materially to reduce the trouble. A record is kept of the different classes of trouble found each month, and these are carefully analyzed to determine their causes.

A list is also posted on the bulletin board on the first of each month, showing the number of cases cleared by each troubleman during the preceding month, together with the number of repeats charged against him. This record greatly helps us in gaging the efficiency of the men.

Since last October, the total number of trouble reports have shown a marked decrease each month, due I believe, to this assignment of districts, the information gained from our records, and the help given us by the plant department, which has taken care of many of the bad spots reported to them.

Enunciation Troubles of the London Operator.

A new numeration for the London telephone operators is being introduced. With the advent of the telephone girl, due to the scarcity of male operators who have joined the colors, the enunciation is undergoing transformation. When approached regarding this new numeration an exchange girl said:

"Oh, yes! It's quite true, you know. We say 'feeve' now instead of 'five'. You know, 'five' sounds like 'nine' on the telephone."

From what TELEPHONY's London correspondent can gather, there was somewhat of a row about a year ago in the telephone service when the public wanted the telephone operators to say "niner." The service was informed: "That's how they pronounce it in America." But it seems one was not quite sure whether the speaker was saying "niner" or "fiver" so the agitation for "niner" a la American was dropper.

According to the telephone operators the matter has since been left to them. Some of them say "fave." This, however, is regarded in some circles as "highbrow" talk. As the exchange operator said: "It might be nane for all one can tell on some telephones. And nobody would ever say 'neen'. So the only thing to do is to drop 'fave' and 'fiver' 'fev' and 'fevver' and say 'feeve' when we have a number to repeat with five in it. Subscribers certainly seem to understand better if we repeat it 'feeve'."

All of which may make everybody using a telephone in London contented. But if the "feeve" is mistaken for Steve sometimes or even suggests fever one cannot blame the London telephone girl, who apparently needs to be "some" linguist.

A Mysterious Telephone Advertisement.

When Manager Paul S. Higman, of the Central Union Telephone Co., at Bedford, Ind., picked up his copy of the Bedford Democrat one day recently, says the Bell Telephone News, he was surprised and vastly puzzled to read the following:

USEFUL TELEPHONE.

Is there a telephone in your home? Is it the only one within three or four blocks around? Do your neighbors use it to order their groceries? Do they walk in and say "I came to use your telephone. We would have one put in but we don't use one enough and our expenses are so high and it costs so much"? Do they talk to their friends for an hour at a time and then say "do I bother you, and please do not tell anyone what I say"? Do they make dates with their friends and then ask "do you care"? Do they meet their friends and say, "call me any time at Mrs. S. and So.'s; she is so nice, she will call me"? If you have, I am sorry for you because I am in just such circumstances.

Friends, take advice; don't bother your neighbors but have a telephone put in. Citizen.

This appeared as an advertisement. Mr. Higman, in his official capacity, places all the telephone advertising in the Bedford papers, and knew the above did not emanate from his office. He called the Democrat and was informed that a woman had dictated the advertisement over the telephone, agreeing to pay five cents per line for its publication.

From Factory and Salesroom

Convention: Tri-State Independent Telephone Association, Memphis, Tenn., May 21, 22

The Alisco Anchors for Pole Line Construction.

It wasn't very many years ago that line construction men used only "dead men" for anchors. But putting in dead men was expensive, so when patent anchors were brought out, there were men who were willing to give them a trial. The trials convinced telephone men that the patent anchor had many advantages. Thus it is that patent anchors have a well-defined place among line construction materials.

There are many types of patent anchors and all have their supporters, for an anchor which may be unsatisfactory in one locality on account of soil conditions will be entirely satisfactory when set in a different kind of soil. One anchor which is quite popular is the screw type. This anchor, as its name implies, is screwed into position in the ground. Another type which is largely used, is the drive anchor which is driven into the ground. A third type of anchor which is favored by many, is the ant-hill anchor, so-called from its shape.

The Three Styles of Alisco Anchors.

Anchors of these three types are now being manufactured and placed on the market under the name "Alisco."

For the Alisco screw anchor, the manufacturer sets forth the following as advantageous features: The entire anchor is made of solid, open-hearth steel. The eye is weldless and the helix or screw is forged to the shaft, thus giving maximum strength at these points. The anchor thus being in one solid piece, there is no possibility of the helix being left in the ground if the removal of the anchor is desired.

It is claimed that, as the lower cutting edge of the screw is made on an involute curve, stone and other obstacles will be forced out of its path; also it will easily cut through roots on account of the involute curve obliquely encountering them. These features facilitate the setting of the anchor, as the trying of several locations caused by obstacles in the path of the anchor is thus avoided. The construction of the anchor, it is contended, is such that it screws into place without leaving loose earth in its trail, thus giving greater holding power due to the earth not being greatly disturbed.

Another advantage claimed for the Alisco screw anchor is that being of solid steel, it can be shipped without danger of breakage or loss of parts. All the Alisco screw anchors are galvanized by the hot dip process and guaranteed to stand the A. T. & T. standard specification tests for galvanizing.

The screw anchor is not adapted for satisfactory use in all kinds of soils and for such cases, the manufacturer has provided the Alisco drive anchor. The shaft and eye of this drive anchor are made of open hearth steel. Two rivet lugs on each wing provide double shear for the rivets. The wings, four in number, are of forged steel and, it is claimed, are arranged to give the least possible resistance in driving but the greatest resistance to pulling power when set. The shank below the wings tapers into a long, sharp point so as to drive easily.

The curve at the end of the wings causes them to open outwardly at the first exertion of pull and the greater the pull the deeper the wings are set until they come to the position where the maximum resistance is offered. When this position is reached, the wings remain fixed.

The Alisco drive anchor is finished with a black enamel. It is also supplied galvanized.

The Alisco ant-hill anchor is made of cast iron and finished in black enamel. In installing, a hole not less than five feet deep is bored with a post hole digger of the same diameter as the anchor. The anchor to which is attached a standard anchor rod is dropped into the hole which is then filled and well tamped.

The characteristics of the Alisco anchors are simplicity, durability and economy. They are manufactured and sold by the Dicke Tool Co., of Chicago and New York. The company also manufactures a complete line of high-grade construction tools and will be glad to send information relative to any of them to those who request it.

Kellogg Telephones Liked in Texas.

B. E. McGirk, manager of the Mullin Telephone Co., Mullin, Texas, informed the Kellogg Switchboard & Supply Co. in a recent letter that the Kellogg telephones on the company's lines have given an unequaled performance in record of service. His remarks are as follows:

"We have several telephones on a rural line that have been in use for twelve years and over, on which we have not spent a cent for repairs, not even for receiver cords. The bearings and cogs of the generators of some of the telephones have become worn but they are giving good service, nevertheless, every day.

Recently, a telephone used on a long farm line was brought into the office for repairs. It was dirty and needed adjustment. After giving it a thorough overhauling and putting in new batteries, we installed it on a poorly constructed, very heavily loaded country line about twelve miles from the office, which had connection through a country plug board, and it gave splendid service. It talked as well as a new telephone on a short single line

The owner of this particular telephone purchased it in 1905 from an exchange manager. She does not know how long it was used on his lines prior to that time.

The Kellogg five-bar, 1,600-ohm telephone is recognized as 'farm telephone efficiency' by all the patrons of the Mullin telephone exchange, although they have no other knowledge of its service giving qualities than its own record on their own long, heavily loaded lines."

The Corwin System at Fort Wayne.

Great interest is being displayed in the economic claims made for the Corwin semi-automatic telephone system, manufactured by the Frank B. Cook Co., of Chicago.

The initial Corwin system, installed in the South exchange at Fort Wayne, Ind., and fully described in TELEPHONY, of August 22, 1914 has been in operation almost a year. It has, we understand, conclusively demonstrated the truth of the claims made for it, and the Cook company is receiving many requests for full information regarding the many advantages and economies the Corwin system affords, all of which would seem to indicate how much the operating field appreciates its possibilities.

The Cook company claims remarkable efficiency in service. These claims include secrecy, speed and unusually good transmission, together with a most attractive reduction in operating and maintenance costs, all of which certainly merit the investigation of manual exchange managers.

The time studies published in previous issues of TELEPHONY, gave some idea of the operating speed and other time values of the Corwin system, from which data the following brief items are of peculiar interest:

An average busy operator-hour.....921 calls
An average operator-hour (3 operators—12 hours each) .....706 calls
Average operator building time, local calls..... 4.4 sec.
Average operator building time, trunked calls..... 3.1 sec.

An operator's building or busy time per call, taken over a 12-hour period of an average day, is 3.76 seconds. This period includes all time from the instant a call reaches an operator, (subscriber giving number, etc.) until the operator clears her position by completing or extending the call. The time mentioned is for mixed traffic, as the originating calls at South exchange average about 56 per cent. local and 44 per cent. trunk calls.

From a maintenance standpoint, the following facts speak for themselves: The semi-automatic equipment in both South and Main exchanges handles considerably more than 20,000 calls per day, and the trouble developing in the equipment in both exchanges averages less than five cases per day.

Summing up, the Corwin system at Fort Wayne has reduced the busy hour operating force from 12 to 3 operators. It is said that practically no trouble has developed and that the highest grade service is furnished and sold at a price that makes a most attractive investment to the purchaser.

New Cracraft-Leich P. B. X. Installations.

The Cracraft, Leich Electric Co., of Genoa, Ill., during the past month delivered P. B. X. equipments of three distinct types. One system was purchased by S. M. Smith of Sparta, Wis., for hotel use, through the Electric Appliance Co., of Chicago. It consisted of the standard common battery P. B. X. apparatus. The switchboard was one of the Cracraft-Leich susbstantial quarter-sawed oak desk type, wired and equipped with 80 lamp signal line equipments and three common battery main exchange trunks. Eighty of their standard residence type telephones with direct current receiver were also furnished.

The Butler Hotel Co., at Butler, Ind., received a Cracraft-Leich Automaphone P. B. X. system which eliminates the use of all storage batteries. This equipment also consisted of a low type switchboard wired for 50 self-restoring drops with 30 lines equipped and included 30 hotel type Automaphones.

The New Princeton Hotel, at Indianapolis, Ind., received the other P. B. X. outfit, consisting of a low type switchboard wired for common battery operation. This equipment was arranged throughout to be operated on a three-wire system, making it possible to employ a very simple but highly efficient telephone. The telephone instruments with this system require no condensers in the ringing circuit and all ringing current is furnished directly from the 60-cycle lighting circuit through a transformer. The system is also wired so that all telephones can be rung simultaneously for fire alarm purposes by simply operating the general alarm key at the switchboard.

The Cracraft-Leich Electric Co. will be very glad to furnish any specific information that may be desired, regarding the three-wire and Automaphone P. B. X. systems, which are somewhat of a departure from the P. B. X. installations now in service.

Length of Service of Nungesser Batteries.

The Nungesser Carbon & Battery Co., of Cleveland, Ohio, recently received the following letter from the Bank of Salem, Salem, Mo.:

"This cover is off one of your batteries. You can see the date for yourself."

(Actual dates upon which battery was put into service and taken out.)

Years.	Months.	Days.
1915	4	20
1908	7	30
6 years.	6 months.	20 days.

"The next longest life was 5 years, six months in a residence. You may use this testimonial if you wish, as it is not uncommon for the batteries to last 3 or 4 years."

Another testimonial letter was received the other day from C. L. Bryant, of the Fisher Telephone Co., of Fisher, Ill., which reads as follows:

"I took out a pair of '1900' dry cells that have been in use in a telephone from May 22, 1900, to May 1, 1915, a period of 5 years, 11 months and 9 days. The telephone was an old American Electric with carbon, diaphram and transmitter."

Stromberg-Carlson Call-A-Phone Campaign.

The Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has a proposition which will be of interest to telephone companies. It is for the sale of its Call-A-Phone system, an electrical device for finding men, which is used in connection with private telephone systems.

The Call-A-Phone has been fully explained in a previous issue of TELEPHONY, but for the benefit of those who did not read the article it again will be described briefly. The Call-A-Phone is an electrical contrivance for augmenting the efficiency of a private branch exchange system, it calling certain officials by means of a simultaneous code call, at regular intervals, upon bells located in various parts of the establishment. The standard apparatus is capable of transmitting any one of twelve code signals at the will of the operator, a separate signal being assigned to the various officials who require the service.

Full details of the plan that the Stromberg-Carlson company has in mind and the proposition which it offers to telephone companies may be obtained upon request.

Rushville, Ind., Company Reports Large Gain in Subscribers.

The Rushville Co-operative Telephone Co., of Rushville, Ind., reports that in the past year it has added the largest number of subscribers to its system in any one year in its history, having added 110 new subscribers. The board of directors elected for the ensuing year is as follows: John H. Frazee, Robert L. Tompkins and Frank A. Capp.

Marchand Clamps for Stranded Wire.

Now that the summer season is at hand, the attention of telephone companies is being directed to their pole lines, upon which more or less reconstruction and extension work is undoubtedly necessary. In this work various types of clamps are essential. The simplicity in design and the time and money-saving features of the Marchand clamps, manufactured by the Steel City Electric Co., of Pittsburgh, Pa., will appeal to telephone men. The accompanying illustrations show that the styles and sizes of these clamps meet the requirements of all classes and conditions of construction.

Marchand clamps for seven-wire strand are made in three styles, viz., clevis clamps, twin clamps and pole clamps. The clamping principle is of a most simple form, known as the wedge. The clamp proper, which consists of a conical-shaped socket and conical wedge, is shown in Figs. 1 and 2. The conical wedge is slotted to allow compression and has a hole in the center for the core or center wire to pass through. The strand is first inserted in the socket and the tapered plug is forced over the core or center wire so that the sheath wires are spread apart as shown in Fig. 3. The cable is then drawn back into the socket by the cable strain. The tapered plug compresses and grips the core wire or wires and the sheath wires are gripped or wedged between the tapered plug and the wall of the socket. The sheath wires are evenly separated by the projections inside the socket to insure equal distribution of pressure on the tapered plug and the wall of the socket.

Marchand clamps, it is claimed, securely grip each wire of strand without introducing strains which would tend to weaken the strand at any point. The strand cannot squeeze out or be released upon excessive strains or the sudden release of strain. The deformation of the tapered plug under pressure caused by the strain on the strand is amply provided for, as the wires, having the greatest strain, are imbedded in the malleable metal until the other wires take up their proportion of the total strain to which the strand is subjected.

The simple construction of the Marchand clamps makes it possible, it is said, to obtain the maximum strength with the minimum weight of clamp. The largest clevis clamp for seven-wire strand weighs 24 ounces and, it is claimed, will easily hold ½-inch, seven-wire strand guy wire to the approximate breaking point of 22,000 pounds. Marchand clamps, the manufacturers maintain, are designed to carry 50 per cent. more load than the tensile strength of the strand to be applied.

When subjected to the maximum strain, less than ⅛-inch of slack is realized from normal to the breaking point of the guy wire. The reports of a number of tests made by the Pittsburgh Testing Laboratory show the powerful grip of Marchand clamps. In the first test a Marchand U bolt type clamp was placed at each end of a ⅝-inch plow-steel 19-wire (Roebling) strand of 42,000 pounds tensile strength. Clamps were held in the testing machine by two two-inch round steel bars—one placed through the U bolt of each clamp. At a load of 48,200 pounds all of the wires of the strand broke at both clamps. The spreader plug or conical wedge and tapered socket of the Marchand clamps were not damaged by the test. A number of other types of Marchand clamps, upon being put to severe tests, were not damaged in the least.

The Marchand clamps are quickly and easily installed. A saving in material is also effected in that but one turn of strand around the pole is required, as shown in Fig. 7, and but one clamp is required for each connection. The clamps for seven-wire strand are especially adapted for guy wires and messenger wires.

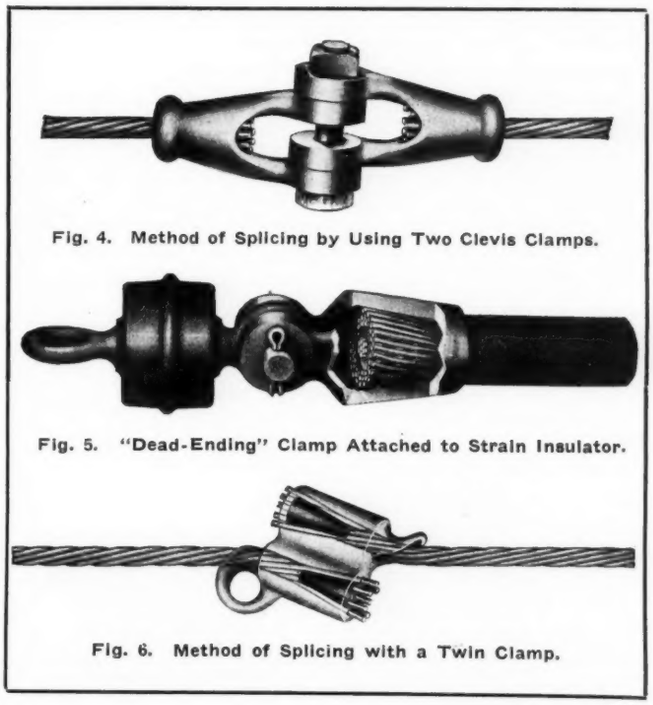


Fig. 4. Method of Splicing by Using Two Clevis Clamps.

Fig. 5. "Dead-Ending" Clamp Attached to Strain Insulator.

Fig. 6. Method of Splicing with a Twin Clamp.

Each style of Marchand clamps is made in two sizes—for light and heavy work. The small sizes of clamps are adapted for all sizes of strands up to and including ⅜-inch in diameter. The large sizes will take all sizes up to and including ½-inch in diameter. The size of the conical wedge or tapered plug and hole through the center vary according to the size of wire to be used.

The clevis style of clamp is constructed on the old and familiar clevis form, which will readily suggest the numerous ways in which it can be used and adapted to various conditions, especially for pole line construction. It can be attached to eye bolts, guy rods, round bars, etc. A splice in a guy wire can be made by using two clevis clamps, as shown in Fig. 4.

When guy wire is to be passed through, instead of around the pole, the clevis clamps can be used as pole clamps, but a heavy washer must be used between the pole and the clamp.

When the clevis clamp is used as a pole fastening, a "saddle" thimble is provided as shown in Fig. 7. The bolt passes through this thimble which prevents friction of the guy wire against the bolt. The "saddle" thimble permits automatic ad-

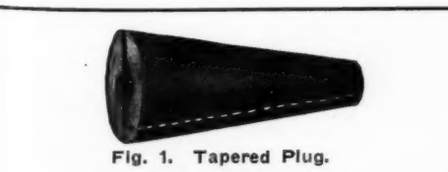


Fig. 1. Tapered Plug.

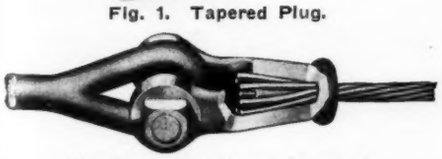


Fig. 2. Clevis Clamp Attached.

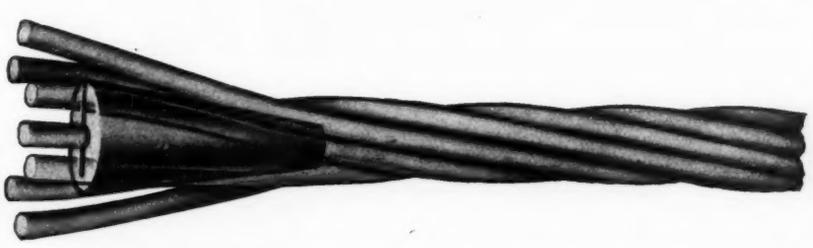


Fig. 3. Tapered Plug Inserted in the End of a Guy Wire.

justment of the clevis to the proper angle of pull, thus equalizing the strain at each side of the pole.

The cutting and compressing tendency on the pole which increases with each turn of the wire around the pole, is eliminated by the Marchand clamps, as it requires but one strand around the pole. In applying the clevis clamp at the top of a pole, the clamp is attached to the wire before the lineman takes it up the pole, thus eliminating much of the work done overhead. When guy wire is looped around the pole, the customary hooks should be used to prevent the wire from slipping up or down, as shown in Fig. 7.

The clevis clamps are provided with a simple and effective nut-lock, consisting of a raised sloping projection on the outer ends of the clevis, as shown in Fig. 4 and other views of the clamps. When the nut is tightened on the bolt, it rides over the projection, causing the clevis ends to spring inwardly. When the nut clears the projection, the clevis ends return to normal position, making it impossible to release the nut without the use of a wrench.

Marchand twin clamps, as shown in Figs. 6 and 8, are especially intended for fastening guy wire to strain insulators and for splicing. They consist of a double tapered socket casting and two tapered plugs and are so constructed that one

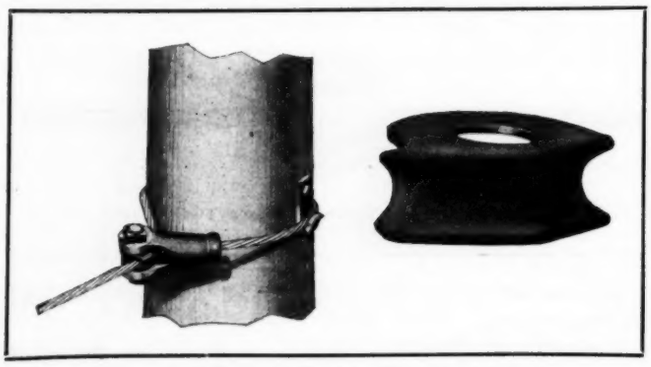


Fig. 7. The Clevis Saddle Thimble Attached.

side of the clamps pulls against the other. Twin clamps can also be used effectively as a pole fastening, similar to the method shown in Figs. 7 and 8, except that the loop must be made large enough to pass around the pole. Used in this way only one clamp is necessary and a minimum amount of guy wire is used.

In the Marchand pole clamp, the guy wire passes through, instead of around the pole. The hole in the pole is only 1/16th of an inch larger in diameter than the size of the guy wire to be used, thus avoiding unnecessary weakening of the pole. The wire usually wrapped several times around the pole is thus saved.

Expansion and contraction or excessive heating, it is claimed,

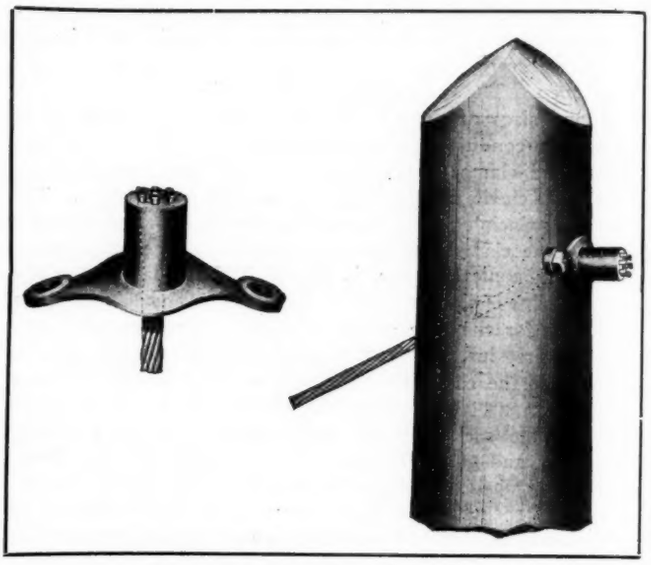


Fig. 9. The Marchand Pole Clamp.

have no tendency to weaken or loosen the grip of Marchand clamps. All parts of the clamps are galvanized by the Sherardizing process to prevent rust and prolong their life.

More Monarch Telephones for Nebraska.

The Monarch Telephone Mfg. Co., of Fort Dodge, Iowa, reports another big telephone contract in Nebraska. Two weeks ago announcement was made of the Tekamah & Farmers Telephone Co., of Tekamah, Neb., buying Monarch telephones to replace sets leased from the Nebraska Telephone Co. Since then the Craig Telephone Co., of Craig, Neb., a neighboring town to Tekamah, has bought Monarch telephones to replace leased instruments, both in town and in the country. The order covers more than 300 five-bar bridging telephones for farm lines and about 40 telephones for use in the town. The installation of the new instruments is being carried on rapidly by the manager, John McDonald, and within a very short time every telephone in the Craig system will be a new Monarch.

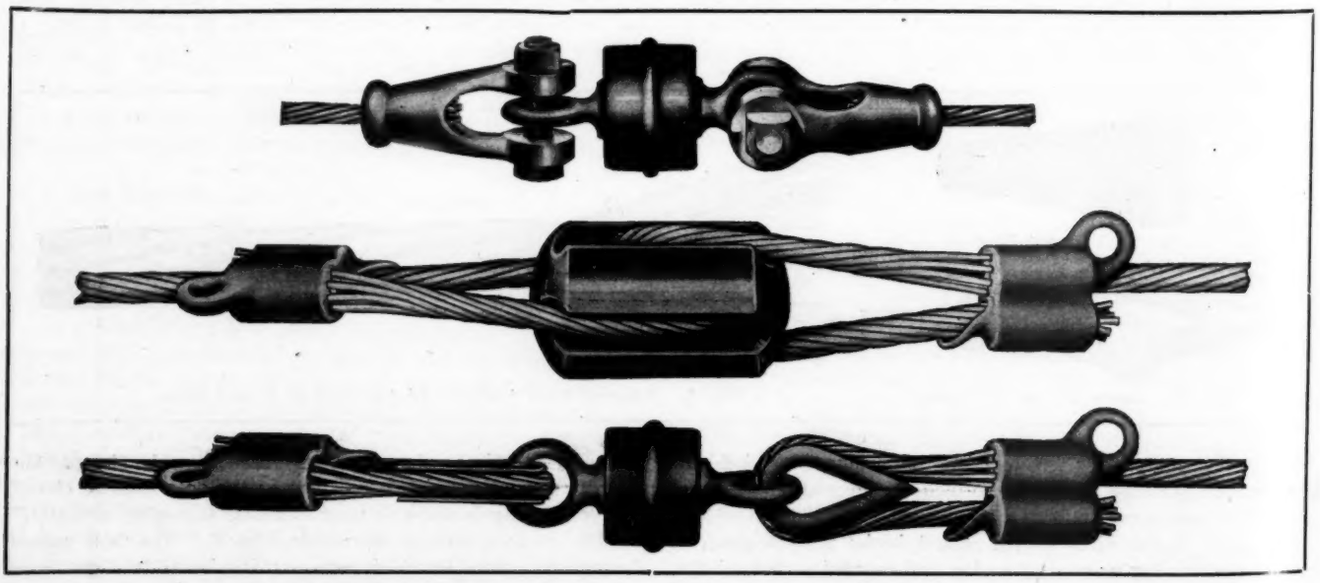


Fig. 8. Several Types of Marchand Clevis and Twin Clamps Adapted to Strain Insulators.

Kellogg Company Plans for the Memphis Convention.

Several members of the Kellogg selling force are planning to attend the eighth annual convention of the Tri-State Independent Telephone Association at Memphis, Tenn., May 21 and 22.

The regular Kellogg display equipment will be on exhibition—a new departure for conventions, enabling prospective buyers to examine at close range various types of standard apparatus.

When these panels were returned from the last convention several weeks ago, they were carefully overhauled and many more pieces of equipment were added. As they stand now, they give a complete representation of what the Kellogg Switchboard & Supply Co. produces. They form, it is claimed, the most comprehensive telephone apparatus display ever assembled.

Currier Gets a "Ford" Story on Rodormer.

W. L. Cook, manager, and George W. Rodormer, vice-president and sales manager, of the Reliable Electric Co., Chicago, met Hiram D. Currier, chief engineer of the Kellogg Switchboard & Supply Co., on the street the other day with a brand new "Blue Book" under his arm. It developed that Hiram recently bought a five-passenger Studebaker. George drives a Ford.

George said: "When you learn to drive that car, come around and I will try it out for good."

Hiram stood very straight with his thumbs in the armholes of his vest and came back with, "I've had that car since Monday noon and have driven it 170 miles."

George: "If you get stuck, telephone me and I'll come down and pull you home."

Hiram: "What do you drive—a 'Flivver'?"

George: "Yes."

Hiram: "I saw a fellow cranking one of those things yesterday and it flew off the handle."

Paragrahps.

H. H. Sanborn and Arthur B. Roehl announce that they have resigned as rate expert and assistant rate expert, respectively, of the Railroad Commission of California, to engage in the practice of law with H. C. Beach under the firm name of Sanborn, Beach and Roehl. The newly organized law firm will maintain offices at 710-14 Humboldt Bank Building, San Francisco, Cal., and will devote special attention to corporation and utility practice.

The Gund Mfg. Co., of La Crosse, Wis., has issued two folders, one descriptive of the Gund high tension guy clamps and the other of the Gund drive and twist anchor. The company will be pleased to send copies of these folders to any interested company, upon request.

The Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has issued revised and up-to-date price lists for construction material and supplies listed in its bulletin No. 1003. Copies of the new price lists may be obtained upon application to the advertising department.

Associated Advertising Clubs to Meet in Chicago.

Chicago will be the scene of the eleventh annual convention of the Associated Advertising Clubs of the World which meets June 20 to 24. This great gathering of the dynamos of the business world to discuss common problems and to advance the banner of truth in advertising, promises to hold a unique place in the events of the year.

President Wilson, war conditions permitting, will head the list of speakers. Hon. William Jennings Bryan, John H. Fahey, president of the Chamber of Commerce of the United States, Henry Watterson, George Horace Lorimer, editor of the Saturday Evening Post, and Arthur Brisbane are among others of national prominence who are to address the sessions. On the Sunday preceding the formal opening of the convention, fifty business men of country-wide reputation will deliver lay sermons in Chicago churches.

New features include a conference of the teachers of advertising and another of the secretaries of advertising clubs. Departmental meetings of men in the several fields of work give opportunity for a discussion of the problems of various phases of advertising, an arrangement which reflects the new freedom in business.

Amusements include a list of social functions for the ladies, a gridiron show to be staged by 150 Chicago men, lake and automobile trips. At present, a whirlwind campaign is being waged by advertising clubs in an effort to mobilize in Chicago at full war strength.

New Exchange for Tri-State in Minneapolis.

One of the oldest landmarks in Minneapolis, located on the southeast corner of Sixth street and Third avenue, South, was recently sold to the Tri-State Telephone & Telegraph Co. by W. G. Crocker, of the Washburn-Crosby Co.

The Tri-State company will start work this month to erect a three-story building that will be used as the Center to attract the attention of all passers-by who interest 1915, according to G. W. Robinson, president of the company.

The plans for the building call for a big lobby and general offices on the first floor, rest rooms and recreation rooms, dining room and kitchen for the employes on the second floor and for automatic telephone equipment and switchboards on the third floor.

The entire cost of the building and the site will be about $150,000. The old building now being used at Seventh street and Third avenue south will be sold. It will be continued to be used as the Center exchange and Minneapolis offices until the automatic equipment has been installed in the new exchange.

A new building will also be erected in the Lake Harriet district. It is to be located next to the Lake Harriet Commercial club at Forty-third street and Upton avenue south.

Additions that will double the size of the North side exchange at 2014 Third street north are also to be started before the summer is over. A total of about $250,000 will be spent in improvements and new building operations, according to Mr. Robinson.

Uncle Sam Buys More Stromberg-Carlson Telephones.

The Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., has secured an order from the United States government for 1,000 telephones. Of these telephones 800 are of the No. 951 type and the other 200 are of the No. 988 desk type. The desk telephone also included extension bells. It is understood that some of these telephones will be used in the Canal Zone.

The Stromberg-Carlson company claims that its business for both telephones and switchboards is 40 per cent. ahead of last year and that more orders are coming in every day.

Monthly Statement of Manitoba Government Telephones.

According to the monthly statement of the Manitoba Government Telephones issued by the Public Utilities Commission, the total revenue for the month ending March 31, 1915, was $143,608.84. The total expenses chargeable for the same period were $110,668.19, which leaves net earning of $32,940.65 for the month. For the four months since November 30, 1914, the total revenue was $568,156.30, the total expenses, $454,000.66, leaving total net earnings of $114,155.64.

Out of the Mail Bag

It is exceedingly gratifying to learn that the Independent telephone men of Minneapolis feel that TELEPHONY was helpful in securing the passage of legislation for the protection and conservation of their business. In a letter, dated April 22, E. P. Wright, of Alexandria, who was secretary of the committee in charge of the work, says:

"I am attaching check to apply on subscription to TELEPHONY. Kindly credit amount and send the publication to me at Alexandria, Minn.

"During the period of the existence of the committee, of which I have been designated as secretary and treasurer, and during the legislative session in Minnesota, where the committee and its advocates have been endeavoring to cause to be protected the needs and rights of the smaller Independent telephone companies and plants from the effects of ill advised legislation, we have had opportunity to observe the work of TELEPHONY and the interest it has shown in favor of Minnesota telephone companies. The excellent articles covering the details of the service, in relation to the interest of the public therein, have held our attention, and promoted the warmest friendly feeling toward your journal.

"It is doubtful whether any single unit of the combined effort made in Minnesota has contributed more in beneficient influence than has TELEPHONY, and I take this opportunity to express the appreciation of my associates and myself of your work. To me, it is a matter of regret that you do not reach more of the general public, outside of the telephone industry, because, after all, the people are the determining factor in the future of the industry. Your journal appears to be doing more than any other factor in helping out the increasing intelligence and civic awakening of telephone managers. If the same could be applied to public officials, state and municipal, in the same way, it would be hard to estimate the good that might be accomplished in bringing about a better understanding betewen the telephone industry and its patrons.

"The articles appearing from the pen of our friend and associate, J. H. Shoemaker, relative to the underlying, fundamental, economic principles of the business, coupled with the close acquaintance with him, have done all, or more, than was needed to bring about the influence with which we managers of the smaller companies were enabled to impress in the shaping of legislation in this state. This man is a clear-visioned optimist, and a human dynamo for performance. He has enthusiasm and faith enough for a colony, coupled with experience and ability that make him a rare personality. His clean living and abstemious habits add to his attractions as a man upon whom any interest with which he may be connected can absolutely depend."

In a letter enclosing his check for subscription, James E. Weston, owner of the Juntura Telephone Co. at Burns, Ore., says: "I always look forward to the coming of TELEPHONY, as it contains so much valuable information and is always up-to-date in publishing the latest telephone news."

All telephone men know what a valuable asset a musical voice is to an operator. When "central" is possessed of a pleasing voice the company's relations with the telephone using public are sure to be more satisfactory. The patrons of the Owensboro (Ky.) Home Telephone Co. are especially favored in this direction, for the operating division includes many girls with particularly good voices. B. Y. Chambers, assistant superintendent, conceived the idea of organizing a quartette and now the music furnished by the telephone singers has brought no little fame to their company. The accompanying photograph shows the members of the Owensboro Home Telephone Quartette, who are (left to right) Miss Lillian Tichenor, local operator; Miss Maude Jarboe, chief operator; Miss Marguerite T. Banks, toll operator; and Miss Tazewell English, cashier.

The singing of the quartette was one of the leading features of the operators' meeting recently held at Bowling Green.

J. J. Cline, general superintendent of plant of the Texas Independent Telephone System in a letter enclosing remittance

Owensboro (Ky.) Home Telephone Quartette.

for his subscription, says: "I certainly appreciate your Home Study courses and am encouraging all of our employes to take up these studies, as I can readily realize, after twenty years experience in the telephone work, that much good should accrue therefrom both to employes and employer."

Mr. Cline is not the only one who appreciates the value of the Home Study courses. The Alberta Government Telephones, Edmonton, Alberta, Canada, has sent in 50 subscriptions with the proviso that the installments already published be furnished complete. Then the Kansas City Home Telephone Co., Kansas City, Mo., sent in 120 subscriptions. Several telephone societies have also sent in subscriptions with the idea of making the course a part of their regular discussions.

"We like your paper very much" says N. Starkey, of Pikeville, Ky., in remitting for his 1915 subscription.

Jay Greaves, president of the McLeod County Telephone Co. with headquarters at Glencoe, Minn., sends the following:

"When any one is displeased with your publication, I suppose that you are very likely to hear about it. Allow me to reverse the procedure and call your attention to a few things I especially approve in your present program. I believe that your reading course is extremely valuable and should be carefully read by every wide-awake man in the telephone business. While the technical articles have all been good, I have been especially pleased with the articles on telephone economics by J. H. Shoemaker. This is partly due to the fact, no doubt, that I have come in contact with Mr. Shoemaker to some extent during the past year and have been greatly interested in the doctrine he is preaching.

"The legislature in Minneapolis has been a battleground for years, and legislation has finally culminated in a law, just passed, placing telephone companies under the jurisdiction of the railroad commission. That this law is not positively vicious toward both the telephone business and the public which it serves, is due, in a very large measure, to the part played by the managers of the small local companies. That these managers were able to play their part so well is due, almost entirely, to the work that Mr. Shoemaker

Which Are You Looking For—

Something for Nothing or a Square Deal?

FOR WEEKS WE HAVE BEEN TALKING TELEPHONE FINANCE TO YOU THROUGH THE COLUMNS OF TELEPHONY AND IN OUR CIRCULARS. BUT IT HAS BEEN MORE THAN WEEKS SINCE WE FIRST GAVE THE SUBJECT OF FINANCING TELEPHONE COMPANIES OUR TIME AND THOUGHT. WE HAVE BEEN DOING THAT FOR A NUMBER OF YEARS, AND THE RESULT HAS BEEN THE FORMATION OF THE NATIONAL TELEPHONE SECURITIES COMPANY. BOTH NATIONAL ORGANIZATIONS HAVE ENDORSED THIS COMPANY. TO US, ITS PLAN SEEMS THE SAFEST, MOST EFFICIENT AND THE MOST PROFITABLE FOR ALL PARTIES CONCERNED.

All reasoning, reasonable men know you can not really get SOMETHING for NOTHING. Thousands have tried it, and their failures, could they be chronicled, would make pitiful reading. So, in our proposition, we are not offering SOMETHING FOR NOTHING, but we are offering VALUE RECEIVED and A SQUARE DEAL. Have you ever had these before, you men who have cooled your heels for hours in the waiting rooms of financial institutions?

Several years ago, Mr. Knipe, of this company, had a rather disagreeable but very educating experience with a "something for nothing" proposition. Since then he has been more wary of them than ever before. The story runs like this: For more than fifty years a railroad southwest from Terre Haute, Indiana, across the state of Illinois has been contemplated, and considerable money has been spent on trying to get it started. Some years ago Mr. Knipe and several Terre Haute financiers began to push the proposition. They were to raise a considerable sum of money for the building of the road, for, like all things except "castles in the air," railroads require money for building. Individual investors and commercial organizations in towns along the proposed route were looking with great favor on the proposition, for all wanted the road and many were anxious to buy stock, when upon the scene appeared a very smooth talking fellow with a most pleasing manner and a truly generous proposition of giving the people SOMETHING FOR NOTHING. All he asked was a very little help in securing right of way and he would build them a railroad. As for wanting to sell them stock or even accept their money as a gift—perish the thought! Instead, he might offer a little stock as a gift to the ones who would be directors in his company. Would they accept the offices he offered them? They would. In leaps and bounds bankers, lawyers, judges and business men sprang to his side, jostling one another for the privilege, and absolutely turning down the proposition of the responsible business men and the responsible construction company. You see the man offered them SOMETHING FOR NOTHING. You can guess the end. They did not get the "something," for the railroad is still unbuilt, the engineers whom the plausible stranger employed, are still unpaid, and the stranger himself is now visiting indefinitely with the warden of a state institution, in expiation of some of his other misdeeds.

Whether the man had some private scheme to fleece the prominent men who flocked to him or whether he was only a tool for a rival railroad company which was determined the proposed road should not be built will never be known. At any rate, he only proved the old saying, that those who expect something for nothing are doomed to disappointment.

Getting back to our telephone proposition—we might offer you some temporary plan whereby a few companies might be benefited and where the promoter might make a few extra dollars, but that is not our idea. We want a real Telephone Securities Company, one in which all Telephone men are interested and one from which all Telephone Companies can get help.

Don't you want this rather than the haphazard methods that have prevailed heretofore when perhaps your neighbor financed his company because he had a "pull" with the wealth of the cities, and you had to see your own property swallowed by a larger company because you could not get the financial aid you deserved?

Do you want to depend on the WHIM of an inventor who may decide at the last minute he wants to put his money elsewhere? Or do you want to have a company of telephone men for telephone men, of which you are a member and to which you can turn for help as a matter of course and not with the idea of begging a favor?

Consider this, Independent Telephone men. We are justly proud of being called Independents. Let us prove that we really deserve our name.

Investigate our proposition. Consider all sides of the question. Make your own decisions.

National Telephone Securities Company

H. H. KNIPE

OLNEY :: ILLINOIS

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

has done in instilling into their minds many of the fundamentals and much of the economics that he is now setting forth in your paper.

President Vail of the American Telephone & Telegraph Co., in his annual letter alludes to an economic unrest and the great problem of right relations between the utilities and the public. Up here in Minnesota we feel the importance of this and believe that telephone men will have to play a leading part in the solution of this problem.

"I like the tone of your editorials and the stuff that such men as Shoemaker and Kelsey are giving us. I wish some means might be found of getting your publication into the hands of every utility commissioner and teacher of economics in the country. After all the telephone business is more than a mere fight, is it not?"

H. B. Shoemaker, of Toledo, Ia., manager of the Commercial Telephone Co. and president of the Iowa Independent Telephone Association, in a recent letter says:

"I desire to commend you for the excellent work in your magazine, and I want especially to commend the economics section of your reading course. I have known the author personally and intimately for a number of years, and I know him to be handling this work in the competent and efficient manner characteristic of him and his work. This course should be widely and carefully read, and not only read but studied and absorbed, and the principles brought forth applied to the reader's own situation. I consider it a most advanced step in the field of the telephone business to have you furnish for us these doctrines in such a pleasing form and, withal, so practical. I wish to state further that, although of the same name as the author of these articles, I bear no relationship to him. This letter is written only in the spirit of commendation and without any solicitation or knowledge on his part. If there is anything I can do to boost for TELEPHONY and the telephone business I shall be glad to do it."

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

HARRY RAMER has been appointed manager of the Hinckley, Ill., exchange of the DeKalb County Telephone Co., to succeed Hoyt Hilbert, who has resigned to go into the well business.

S. M. WOODARD, of Winnsboro, Texas, has purchased the Blooming Grove Telephone Co., of Blooming Grove, Texas, from W. M. Thompson, and will assume active charge of the exchange.

H. O. POTTER, for the past four years manager of the Sutherland Telephone Co., of Sutherland, Iowa, has accepted a position with the New State Telephone Co. as manager of the Odebolt, Iowa, exchange.

HUGH GUNNISON, for the past two years associated with the Mountain States Telephone & Telegraph Co., as special representative at Phoenix, Ariz., has been promoted to the management of the Bisbee, Ariz., exchange of the company.

EDWIN T. HERBIG, chief clerk of the Central Union Telephone Co., at Dayton, Ohio, left recently for Marion, Ohio, to assume charge of the Marion County Telephone Co. in that city, after a connection of several years with the Central Union company.

P. D. GLEASON, formerly manager of the Lexington exchange of the Nebraska Telephone Co., has been placed in charge of the Alliance, Neb., exchange of the company, to succeed O. A. Fullerton, who has engaged in business with his father at Fullerton, Neb.

C. E. DEMOREST has been promoted to the position of commercial manager of the Iowa Telephone Co., in Sioux City. Mr. Demorest has been in the employ of the company 20 years and recently was manager of the Carroll office. He succeeds E. R. Dorum, who will remain with the company in another capacity.

CHARLES A. ROLFE, president and general manager of the Southwestern Home Telephone Co., of Redlands, Cal., has been appointed a member of the International Jury of Award of the Panama-Pacific International Exposition for Group 39 in the Department of Liberal Arts, comprising exhibits relating to electrical communication.

Obituary.

JOSEPH L. BOSTWICK, vice-president of the Rock County Telephone Co., orf Janesville, Wis., died recently at his home in Janesville, after a brief illness with pneumonia. Mr. Bostwick was for many years one of the leading business men of Janesville, as a member of the dry goods firm of J. M. Bostwick Co.

New Companies and Incorporations.

HEMMINGWAY, N. C.—The People's Telephone Co. has been incorporated with a capital stock of $2,000 by L. G. Day and others.

HALLIDAY, N. D.—The Farmers' Co-operative Telephone Co. has recently filed articles of incorporation with the secretary of state with a capital stock of $3,000. The incorporators are R. C. Smith, A. Strand and B. Kyseth.

LIGNITE, N. D.—The Southwest Telephone Co. has been organized by R. Huttner, P. S. Graneng and Peter Amundson.

OKLAHOMA CITY, OKLA.—The Dickson Telephone Co. was recently incorporated with a capital stock of $750. The incorporators are Henry Dodd, A. S. Wentz and J. M. Harrison.

KNOWLTON, WIS.—The Knowlton Telephone Co. has been organized by J. H. Carter, E. L. Carter and Adam Feit. The capital stock is $3,000.

Construction.

CEDAR RAPIDS, IOWA.—The Iowa Telephone Co. is placing a considerable amount of wire in underground conduits and making aerial extensions to cost in the neighborhood of $40,000.

CONCORDIA, KANS.—The United Telephone Co. whose headquarters are at Abilene, Kans., is planning to erect a new exchange building in this town at a cost of $25,000.

CARLISLE, KY.—The Nicholas Home Telephone Co. operating in Carlisle and Nicholas county, is erecting new cables at a cost of $5,000.

MIDDLESBORO, KY.—The Cumberland Telephone & Telegraph Co. has a crew at work making extensive improvements to the local system, which will cost approximately $15,000.

OAKDALE, N. D.—The North Dakota Independent Telephone Co. is planning to build an exchange in this town.

SILVER, CITY, N. M.—Improvements to cost $15,000 have been authorized by the Mountain States Telephone & Telegraph Co. for the Silver City exchange.

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